NOVA SCOTIA OIL AND GAS REPORT 1988

REPORTING PERIOD: AUGUST 1987 TO JUNE 1988

Nova Scotia

Department of Mines and Energy

Honourable Ken Streatch
Minister

John J. Laffin, P.Eng.
Deputy Minister

Cover Photo:
The land rig Simmons #6 on location, drilling Irving Chevron Mull River #1, just off the Ceilidh Trail in the rolling hills of western Cape Breton.
Photo: Reg Morrison

Centrefold:
A collage of oil patch belt buckles on a background of Nova Scotia tartan. Photo: Reg Morrison

MINISTER'S MESSAGE

Honourable Ken Streatch

Since taking over as Minister of Mines and Energy this is my first opportunity to review oil and gas exploration activities in Nova Scotia for the Oil and Gas Report. I am pleased to be able to comment on what has taken place both offshore and onshore Nova Scotia during the last year as well as to express our continuing belief in and commitment to development of our petroleum resources. My predecessor noted last year how petroleum activity in this province, like that in all other oil and gas regions of the world, is strongly influenced by world oil prices. At that time prices had risen above U.S. $20 per barrel, whereas this year, prices have been consistently in the U.S. $15 to U.S. $18 per barrel range. Not surprising therefore, exploration activity offshore has been somewhat restricted over the past year.

As many readers may be aware, most of the significant discoveries to date offshore Nova Scotia have been natural gas. Development of this resource is dependent on three key factors — reserves, markets and prices. Natural gas prices have been traditionally related to oil prices which, as noted above, remain low. Market opportunities for Canadian natural gas in the United States have been hampered over the last several years by a surplus of domestic United States natural gas often referred to as the "gas bubble".

Nonetheless, there are some indications that brighter prospects lie ahead. For example, there are signs that the "gas bubble" in the United States has diminished as evidenced by the fact that close to record volumes of Canadian gas were exported south of the border in 1987. Off Nova Scotia, following discussions between Mobil and Shell, there is now a general acceptance that sufficient reserves of natural gas exist in the Sable Island area to support a joint project. Thus, price improvement in the north-eastern United States market is the key determinant as to when development would begin.

Similarly, smaller scale offshore oil development, such as the Cohasset and Panuke fields, awaits higher crude oil prices. The discovery of other small oil fields "on trend" with Cohasset and Panuke would obviously improve oil production prospects.

The item on the offshore scene which has produced the most headlines in the past year has undoubtedly been the Georges Bank Drilling debate. This has culminated in a moratorium on drilling on the Bank until at least the year 2000 pending a detailed environmental and socio-economic review to be held in the late 1990's. Without restating the issues involved here, I would hope that the oil and gas industry would appreciate the importance of the rich fishing grounds on Georges Bank to the economy and the social and cultural heritage of southwestern Nova Scotia. The decision made in this unique portion of our offshore area should in no way be interpreted to mean that industry's investment in other regions offshore and onshore is not welcomed and appreciated.

This edition of our Oil and Gas Report features onshore exploration activity during the past year as well as offshore events. You will note our cover photograph features the first onshore petroleum well spudded since 1984 — the Irving Chevron Mull River #1 well drilling this summer near Mabou in Cape Breton. Another recent event of note was a natural gas show during the drilling of a potash borehole near Alton in Colchester County. The event has led to a call for nominations by industry of exploration lands in the area. In addition, a coal gas agreement was signed this year with the Cape Breton Development Corporation with a view to that company using coal gas to generate electricity for the Lingan Mine. Clearly, our onshore resources are also deserving of the petroleum industry's attention and, as always, my staff are pleased to provide information and assistance in this regard.

Ken Streatch, Minister

June 30, 1988

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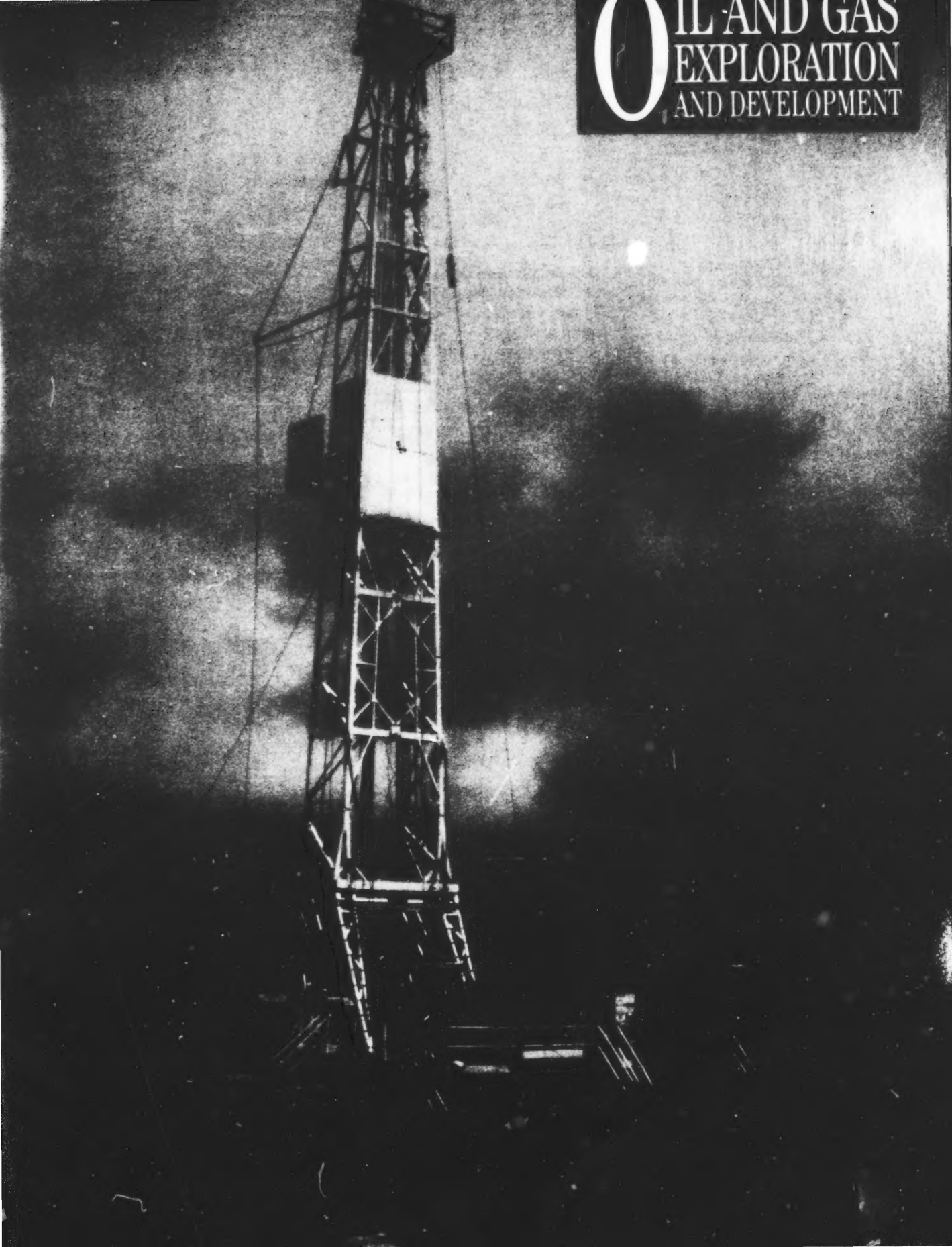
Simmons #6 rig drilling Irving Chevron Mull River #1.
Photo: Reg Morrison

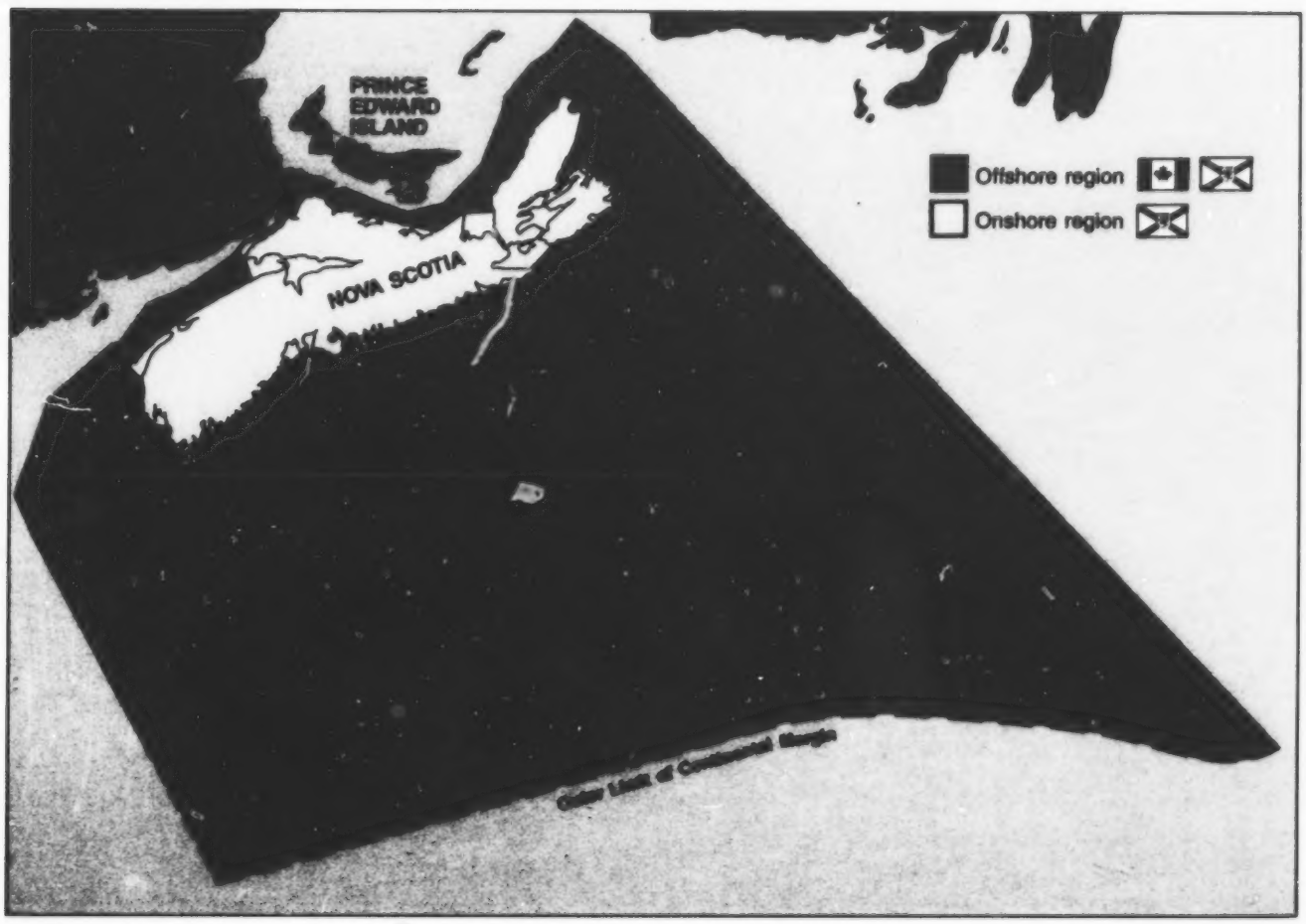


OIL AND GAS EXPLORATION AND DEVELOPMENT

1 INTRODUCTION

Oil and gas activity in Nova Scotia is, for administrative purposes, divided according to whether it occurs in the offshore or onshore region (Figure 1). The offshore region is administered jointly by the Governments of Nova Scotia and Canada under the provisions of the Canada-Nova Scotia Offshore Petroleum Resources Accord, while the onshore region is administered solely by the provincial government.

Figure 1
Nova Scotia Offshore and Onshore Regions



2 OFFSHORE REGION

THE CANADA-NOVA SCOTIA OFFSHORE PETROLEUM RESOURCES ACCORD

In 1986, the Governments of Canada and Nova Scotia entered into the Canada-Nova Scotia Offshore Petroleum Resources Accord. The Accord replaces — and contains significant improvements to — the March 1982 Canada-Nova Scotia Agreement on Offshore Oil and Gas Resource Management and Revenue Sharing. Legislation to implement the Accord has been passed by the Nova Scotia Legislature and at the time of writing was awaiting final reading in the Parliament of Canada. Both pieces of legislation will come into force when they are simultaneously proclaimed by the Governments of Canada and Nova Scotia.

The most important aspects of the Accord deal with resource and fiscal management and are described below:

1. Resource Management — A new independent Board will replace the existing Canada-Nova Scotia Offshore Oil and Gas Board, ensuring joint federal-provincial management of the offshore. The Board will deal with matters directly related to the management of offshore petroleum resources, and will have an office and staff located in Nova Scotia. It will also take over the activities of the Canada Oil and Gas Lands Administration (COGLA) as they relate to offshore Nova Scotia.

The new Board will have five members including a chairman appointed jointly by both governments. The other members may be appointed jointly, or each government may appoint two members. No more than two members of the Board may be federal or provincial public servants.

The Canada-Nova Scotia Offshore Oil and Gas Board will be responsible for decisions such as:

- declaring significant discoveries;
- regulating good oilfield practices;
- exercising emergency powers;
- approving technical aspects of development plans;
- collecting royalties;
- public review of matters within its mandate; and
- making recommendations with respect to proposed amendments to the legislation and regulations under the Accord.

Certain Board decisions are considered fundamental and can be vetoed by the two governments. These include:

- Calls for Bids and the issuing of exploration licences following a Call for Bids;
- setting terms and conditions of significant discovery licences and production licences;
- final approval of development plans.

Within the Sable Island "footprint" and the Bay of Fundy, the Nova Scotia Minister of Mines and Energy will have the sole power of veto for these fundamental decisions. In the remainder of the Nova Scotia offshore region, the development plan would be subject to veto by the Nova Scotia Minister only, but all other fundamental decisions would be addressed jointly by the federal and Nova Scotia energy ministers.

In turn, the federal energy minister may act unilaterally to override Board decisions or the provincial minister's veto, if in the opinion of the federal minister, the decision or veto unreasonably delays the achievement of security of supply of crude oil (as defined in the Accord). In the case of disagreement between ministers on the question of delay of security of supply, the matter will be decided by the National Energy Board.

The Accord acknowledges that Nova Scotia will have an equivalent status to other producing provinces, in negotiations and consultations with the Government of Canada in all matters affecting petroleum resources in the offshore area.

2. Fiscal Matters — Under the terms of the Canada-Nova Scotia Offshore Petroleum Resources Accord, Nova Scotia has the authority to establish and administer resource revenues as if the oil and gas resources were located on the land portion of Nova Scotia. The revenues

that the Province will receive include:

— royalties;
— provincial corporate income tax;
— sales tax;
— bonus payments;
— rentals and licence fees; and
— other forms of revenue of a provincial nature and other taxes which may be established.

The Government of Canada will receive:

— federal corporate income taxes; and
— other revenue of a federal nature and other taxes which may be established under federal law.

The equalization provisions of the 1982 Agreement have been incorporated into the Accord, to ensure that equalization payments will not decrease dollar for dollar as a result of offshore revenues. The 1982 provision, allowing the Province to take up to a 50 percent interest in offshore pipelines and their onshore extensions, has also been retained.

Other fiscal provisions of the Accord include:

— Arrangements for the province to receive Crown Share Adjustment payments from Canada. This provision confers financial benefits Nova Scotia would have enjoyed had it acquired a portion of the Crown Share, as provided for in the 1982 Agreement, without the risk associated with an actual acquisition.
— The $200 million Development Fund in the 1982 Agreement will be converted from a loan to a grant.
— Canada will make available a $25 million grant to Nova Scotia Resources Ltd., a provincial Crown corporation established to develop Nova Scotia's oil and gas resources, to assist it in exploration and oil and gas developments offshore.

The Accord also deals with other matters including: Nova Scotia benefits, public review of prospective developments, provincial access to offshore production, environmental protection, and constitutional entrenchment.

OFFSHORE PETROLEUM ROYALTIES

The basic elements of Nova Scotia's Offshore Petroleum Royalty Regime have been announced. Nova Scotia's objective in designing the royalty regime was to create a system which would help produce an attractive rate of return, adequate cash flow, and fiscal stability for industry investors, while ensuring Nova Scotia a fair economic return and encouraging recovery of marginally economic reserves. Based on these objectives, the following royalties for the offshore were developed:

Before Project Payout

- A base royalty equal to 2 percent of gross revenues and

After Project Payout

- A royalty equal to 30 percent of net profits before tax with the minimum royalty equal to the base royalty.

Project payout is the date on which cumulative gross revenue equals the sum of eligible capital costs, operating costs, royalties paid, and cumulative return allowance. Eligible capital costs are specified exploration and development costs within the project boundary. The return allowance is calculated each year using a percentage of those costs which have yet to be recovered from project revenues. The percentage equals the rate of long-term Government of Canada bonds plus 10 percent. This represents the minimum, risk-adjusted rate of return required by investors in an offshore project.

This system, which includes fixed-share and profit-sharing royalties, recognizes the right of the Crown to a share of production, as owner of the resource, yet is sensitive to the need for project profitability. At the same time the royalties take into account the unique characteristics of offshore development, which requires long lead times for exploration, delineation, and construction — during which time no revenue is generated. Because of high technical and financial risks, it is important that capital costs be recovered as quickly as possible from revenues. The royalty is thus minimal during early production and at a maximum when the capital invested has been recovered from the project by its sponsors. Overall, the royalty regime encourages development, while providing a fair share of offshore production revenues to the people of Nova Scotia.

3 ONSHORE REGION

PETROLEUM RESOURCES ACT

The onshore region is comprised of the actual land mass of the province together with certain submarine areas not subject to the Canada-Nova Scotia Offshore Petroleum Resources Accord, such as the Minas Basin, St. Georges Bay and Chedabucto Bay. This amounts to approximately 14,500,000 acres (5 868 150 ha), one third of which has the geological potential to produce hydrocarbons. Petroleum exploration and production rights onshore are governed by the Petroleum Resources Act and the Petroleum Resources Regulations. The legislation establishes separate regulatory processes for oil and gas and coal gas.

OIL AND GAS

The Petroleum Resources Act provides for three types of agreements in connection with exploration and production of oil and gas:

Exploration License — Grants a non-exclusive right to explore for petroleum. An exploration license has a term of one year and is intended to allow preliminary exploration to delineate areas of potential. The licensee may not drill a well deeper than 295 feet (90 m) and does not have the right to produce petroleum.

Exploration Agreement — Confers the exclusive right to explore for petroleum and the exclusive right to apply for a production lease for specified lands. An exploration agreement is usually issued after a Call for Proposals has been held, and has a 3-year term. It permits the agreement holder to drill deep test wells and to produce oil and gas for test purposes. Annual rentals are $0.05 per acre ($0.12/ha).

Production Lease — If a commercial discovery is made and the explorer submits a development plan acceptable to the Minister of Mines and Energy, a production lease will be issued for an initial term of 10 years. A production lease grants the leasee the right to produce oil and gas from the leased area and to market it in accordance with regulations. All oil and gas marketed is subject to a 10 percent royalty payable to the province. However, as an incentive to encourage development, the first lease granted from any exploration agreement is exempt from this royalty for the first two years.

COAL GAS

Part III of the Petroleum Resources Regulations which came into force on December 1, 1987, provides for two types of agreements in respect of coal gas:

Coal Gas Exploration Agreement — Confers the right to explore for coal gas and the exclusive right to apply for a coal gas production agreement for specified lands. An annual rental of $0.05 per acre ($0.12/ha) is payable to the Province.

Coal Gas Production Agreement — A coal gas production agreement confers upon the lessee the exclusive right to produce coal gas from the subject lands for commercial purposes. The primary term of a coal gas production agreement may not exceed ten years. However, if coal gas is being produced commercially or if the lands are deemed capable of commercial production, the term will be extended. All coal gas produced under the authority of a coal gas production agreement is subject to a five percent royalty payable to the province.

Both coal gas exploration agreements and coal gas production agreements are subject to provisions in the regulations designed to protect the holder of coal rights.

1 MANAGEMENT OF OFFSHORE LANDS

HIGHLIGHTS

Many significant events involving Nova Scotia's offshore lands have occurred since the signing of the Canada-Nova Scotia Offshore Agreement on Oil and Gas Resource Management and Revenue Sharing on March 2, 1982. Highlights of key activities during the past six years are as follows:

1982 In March 1982, the Canada-Nova Scotia Offshore Oil and Gas Board was established to manage oil and gas resource activity off the coast of Nova Scotia. Oil companies formerly holding provincial licenses or federal leases began negotiating exploration agreements with the newly established Board.

1983 The first well under the new exploration agreement regime, West Esperanto B-78, was drilled in May 1983. Subsequently, approximately 40 exploration and delineation wells were drilled.

1984 May 1984 brought the conclusion of negotiations with oil and gas companies for 35 first-round exploration agreements calling for 46 wells to be drilled by 1988. In July, the Canada-Nova Scotia Offshore Agreement on Offshore Oil and Gas Resource Management and Revenue Sharing was proclaimed in legislation by the Governments of Nova Scotia and Canada. Later that year the World Court rendered a decision on the Canada/U.S. boundary line in the Gulf of Maine. The decision opened the possibility of exploratory drilling on the Canadian portion of Georges Bank.

1985 In April 1985, the first new offshore lands since 1982 were awarded to two exploration groups, one led by Canterra Energy and the other by Husky Oil. In December negotiations were finalized on the first second-round exploration agreements.

1986 In February 1986, the Canada-Nova Scotia Offshore Oil and Gas Board issued a Call for Nominations. In June 1986, the Board issued a Call for Proposals which gave industry an opportunity to bid competitively on the nominated lands. Following receipt of bids, an exploration agreement was signed in November 1986.

The Canada-Nova Scotia Offshore Petroleum Resources Accord was signed in August 1986. The Accord gives Nova Scotia increased input into the management of offshore oil and gas exploration and development, including control over revenues from offshore resources as if they were onshore.

1987 In May 1987, an act to implement the Canada-Nova Scotia Offshore Petroleum Resources Accord was passed by the Nova Scotia Legislature and will be proclaimed once the mirror legislation is passed in Parliament. The act will create a new Canada-Nova Scotia Offshore Oil and Gas Board.

1988 In response to environmental concerns, the Governments of Canada and the Province of Nova Scotia jointly proposed that a moratorium be put in place to prevent oil and gas drilling activity on Georges Bank until at least the year 2000, pending a public review of the environmental and socio-economic impacts of such activity. This moratorium was incorporated in both the federal and provincial Accord legislation.

EXPLORATION AGREEMENTS

In recent years the total amount of land held by exploration companies in the Canadian frontier areas has been decreasing steadily. This trend continued last year in the Nova Scotia offshore region. With the surrender of four exploration agreements and the relinquishment of 50 percent of the lands under exploration agreement 350, total land under active exploration agreements fell to 857,090 acres (347 000 ha). Currently, exploration rights are concentrated in the Sable Island area (Figure 2).

Four declarations of significant discovery were made during the past year. This brings the total number of officially recognized significant discovery areas to 19. These 19 declarations cover an area of approximately 237,120 acres (96 000 ha) (Figure 3).

MORATORIUM LANDS

The question of whether oil and gas exploration should be permitted on Georges Bank continued to generate interest during the past year. In November 1987 the Premier stated that after extensive consultation and study, the Government of Nova Scotia had concluded that such activities should be prohibited on Georges Bank. Legislation which prohibits oil and gas exploration on Georges Bank prior to January 1, 2000 and requiring the establishment of a public review panel by January 1, 1996 was passed by the provincial legislature on May 25, 1988. The federal government has introduced mirror provisions which is expected to be passed by Parliament in July 1988.

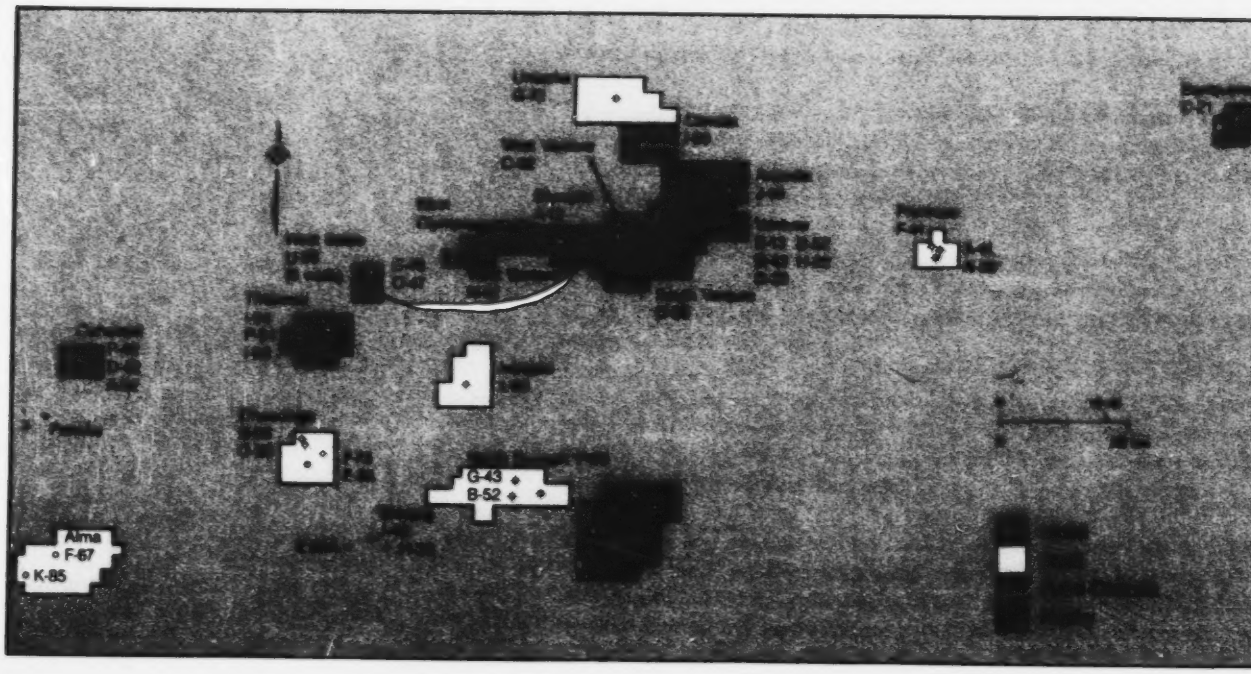
In addition to the Georges Bank moratorium lands, another 3.9 million acres (1.6 million ha) of the offshore region remains under moratorium as a result of the uncertainty surrounding the establishment of the Canada-France international boundary near the French islands of St. Pierre and Miquelon. When this boundary question is resolved, the holders of former exploration permits in the area will have the opportunity to negotiate new exploration rights with the Canada-Nova Scotia Offshore Oil and Gas Board.

Figure 2

Lands Held by Exploration Companies, June 1988

Figure 3

Discoveries Declared Significant by the Canada-Nova Scotia Offshore Oil and Gas Board



2 EXPLORATION ACTIVITY

Roughnecks running drillpipe on a rig offshore Nova Scotia. Photo courtesy Shell Canada.

The decline in world oil prices over the past three years and the depressed gas prices in North America have caused the decrease in exploration offshore Nova Scotia. The level of activity reached a peak of 14 wells in 1984 and an average of six wells per year since 1981 (Figures 4 and 5). One well was spudded offshore Nova Scotia in the spring of 1988.

Two operators were active offshore Nova Scotia in the past year. Mobil and partners spudded the South Sable B-44 exploratory well. At the time of writing (June 30, 1988) the well was being prepared for a drill stem production test. Shell Canada commenced a geophysical seabed survey in the Penobscot area north of Sable Island.

Figure 4

Drilling Activity Offshore Nova Scotia, 1967-1988

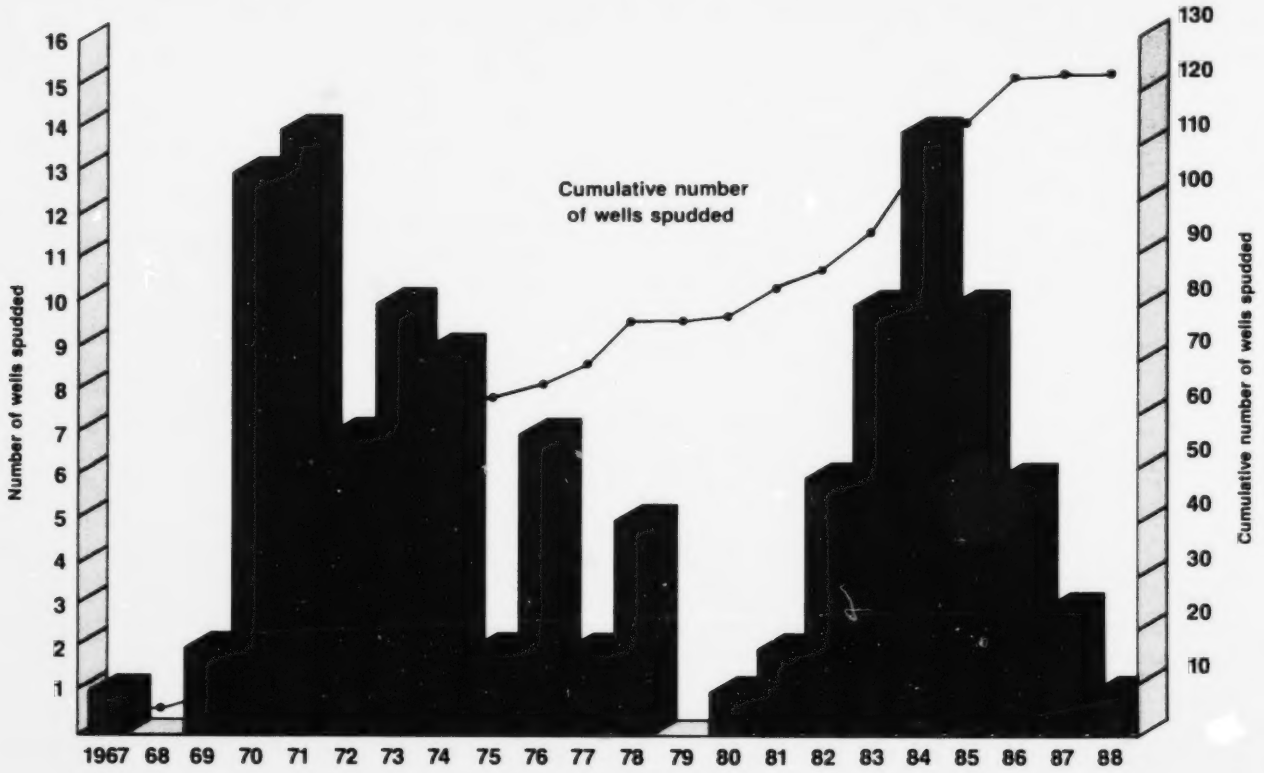


Figure 5

Offshore Statistical Summary, 1981-1988

		1981	1982	1983	1984	1985	1986	1987	1988[1]
Exploration Agreements Concluded (Based on Effective Dates)		0	26	6	3	10	2	0	0
Miles of Seismic Shot		11,662	18,909	22,960	13,414	6,835	429	121	N/A
Wells Spudded		2	6	10	14	10	6	3	1
Wells Completed		1	3	10	13	14	8	3	—
Total Footage Drilled		26,227	93,648	178,038	233,090	154,409	97,585	31,436	N/A
Rigs Active[2]		2	3	6	7	5	3	1	1
Dollars spent by Operators (millions)	Seismic	17.4	37.1	48.5	23.2	29.2	0.9	0.2	N/A
	Drilling	65.0	220.0	564.4	594.7	452.0	176.8	35.3	N/A
TOTAL		**82.4**	**257.1**	**612.9**	**617.9**	**481.2**	**177.7**	**35.5**	**N/A**

[1]to mid-June

[2]Average number of rigs working during the year

3 EXPLORATION AND DELINEATION DRILLING RESULTS

Production test in progress on the Scotian shelf.
Photo courtesy Petro Canada.

Exploration activity continued to focus on proving additional commercial reserves around Sable Island through drilling of new structures detected by seismic analysis. By June 1988 the 125th well in Nova Scotia's offshore history was spudded. Of these wells, 70 percent have been wildcats (the first well drilled on a new geological feature) and 30 percent were delineation wells (to evaluate discoveries already made).

Seventeen significant natural gas finds and four significant oil discoveries have been recorded since drilling first began (Figure 6). Thirteen of the discoveries have been made since the 1979 Venture discovery — 6 on Mobil's Sable Island block, 5 on Shell's Shelf lands, 1 on Husky's Chebucto block, and 1 on Petro-Canada's Banquereau exploration agreement. The success rate recorded in the past 8 years can be attributed to a number of factors. Some of those factors include: the focus of drilling in the Sable Island area as a result of the Venture discovery in 1979; improved geophysical technology; and a greater understanding of the geology of the area as the number of wells drilled increased.

Under current legislation, a discovery may be declared significant if a discovery well on a geological structure flows hydrocarbons when tested and if geological and engineering information suggest that the structure has potential for hydrocarbon production. Exploration agreements on lands where a significant discovery has been made are exempt from expiry. Once a discovery has been declared significant, the Board can however, order a company to drill one or more wells. Each declaration includes the name of the discovery well and a description of the lands surrounding the well making up the discovery area. Discoveries declared significant by the Board include Mobil's Venture discovery and other gas discoveries by Mobil, Shell, Petro-Canada, and Husky.

The most recent resource estimates (1988) by the Canada Oil and Gas Lands Administration (COGLA) for offshore Nova Scotia show discovered resources of 5.7 trillion cubic feet (160.9 billion m^3) of gas and 144 million barrels (22.9 million m^3) of oil and condensate (Figure 7). This represents a 137 percent increase in discovered gas resources since the Venture discovery in 1979. Oil resources (including condensate) increased more than 67 percent over those resources discovered prior to the Venture discovery.

Figure 6

Significant Oil and Gas Discoveries and Test Summary

OIL	No. of Wells Drilled into Each Structure	Key Wells	Year Drilled	Total Depth (ft.)	GAS Maximum Test Rate (Single Test) (MMCF/d)	GAS Combined Test Rate (MMCF/d)	OIL Maximum Test Rate (bbls./d)	OIL Combined Test Rate (bbls./d)
1 Paruke	2	B-90	1986	11,302	4	4	6,096	6,096
		E-99	1987	8,225	**	**	**	**
2 Cohasset	3	A-52	1986	9,340	270	1.1	7,740	29,200
		D-42	1973	14,521	071	096	1,050	1,565
3 Primrose	3	N-50	1972	5,622	17.4	50.5	350	650
4 West Sable	8	O-47	1972	13,775	5.8	6.1	Traces of Oil	
		E-48	1971	11,820	10.6	64.0	2,800	4,080

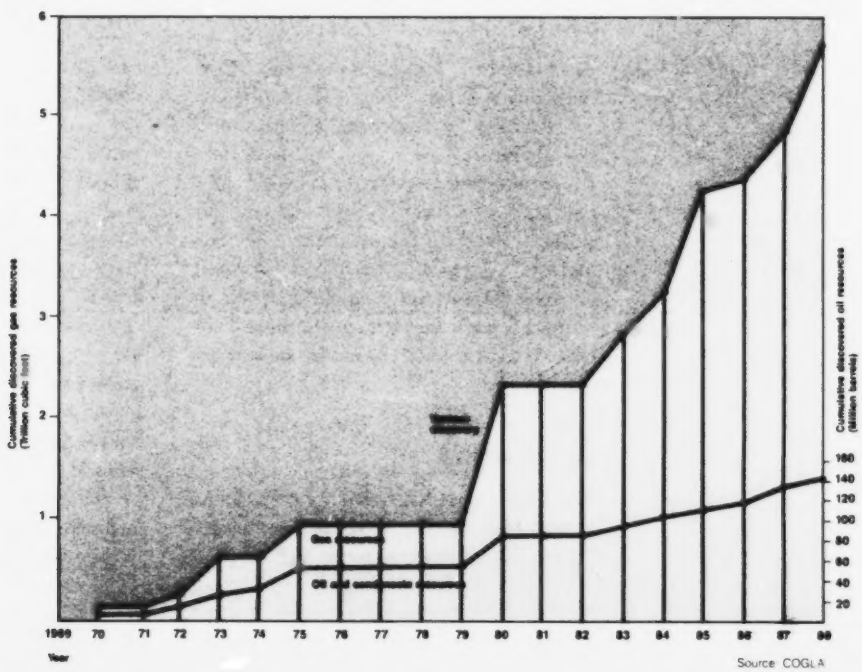
GAS and Condensate							CONDENSATE Combined Test Rate (bbls./d)	CONDENSATE Combined Test Rate (bbls./MMCF)
5 South Triumph	2	B-52	1986	12,992	27.5	27.5	150	5.4
		G-43	1985	14,777	37.0	72.2	360	5.0
6 West Olympia	1	O-51	1985	15,800	21.3	21.3	576	27.0
7 West Venture	1	C-62	1984	18,117	33.5	33.5	160	4.8
8 West Venture	1	N-91	1984	18,200	*	*	*	*
9 Chebucto	1	K-90	1984	17,175	22.1	44.5	324	7.3
10 Alma	2	K-85	1985	11,817	30.2	90.2	827	9.2
		F-67	1984	16,581	29.8	61.2	709	11.6
11 Uniacke	1	G-72	1984	18,816	20.6	26.6	150	5.6
12 Glenelg	4	N-49	1986	13,255	30.7	68.0	363	5.3
		F-58A	1984	13,753	23.4	34.4	387	11.2
		J-48	1983	16,890	30.0	92.4	640	6.9
13 Arcadia	1	J-16	1983	19,701	14.1	25.0	119	4.8
14 South Venture	1	O-59	1982	20,261	18.2	93.4	3,403	36.4
15 Olympia	1	A-12	1982	19,896	17.5	56.0	845	15.1
16 Banquereau	1	C-21	1982	16,375	19.9	20.7	100	4.8
17 Venture	5	H-22	1984	19,501	38.0	68.3	781	11.5
		B-52	1983	19,554	49.7	63.1	207	3.3
		B-43	1982	19,268	15.0	95.0	2,100	22.1
		B-13	1981	17,600	18.6	81.2	1,158	14.3
		D-23	1979	16,200	22.6	44.4	548	12.3
18 Intrepid	1	I-80	1974	13,651	7.6	18.1	191	10.5
19 Cohasset	1	I-59	1974	15,010	11.0	19.6	1,331	68.0
20 Thebaud	4	C-74	1986	16,896	47.6	238.4	2,529	10.6
		I-93	1985	16,949	28.8	35.4	849	24.0
		I-94	1978	12,997	13.7	13.7	404	29.5
		P-84	1972	13,500	10.6	30.0	103	3.4
21 Onondaga	4	E-84	1969	13,085	•	•	•	•

**Produced 24,000 bbls oil over a 6-day test. No additional results released to date.
*Well control problems prevented tests from being run on this well.
• Not flow tested but mechanical logs indicated a good reservoir.
These initial rates were tested but declined during testing.
These initial rates were tested but declined during testing.

NOTE: MMCF/d = million cubic ft per day

Figure 7

Discovered Gas and Oil Resources Offshore Nova Scotia, 1969-June 1988


Cumulative discovered gas resources (Trillion cubic feet)
Cumulative discovered oil resources (Billion barrels)
Gas discoveries
Oil and condensate discoveries
1969 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88
Year
Source: COGLA

4 DEVELOPMENT PROSPECTS

Progress is being made by operators in establishing the basis for commercial production of both gas and oil. However, the dramatic reduction of world oil prices has delayed the schedule for petroleum development offshore Nova Scotia. The following is a summary of significant events in gas and oil development in the past year.

OFFSHORE GAS DEVELOPMENT

Of the 5.7 tcf (160.9 billion m^3) of natural gas reserves (proven and probable) discovered offshore Nova Scotia, approximately 4.2 tcf (118.5 billion m^3) are within a 25 mile (40 km) radius of Sable Island. The major gas discoveries are shown in figure 8. This concentration of reserves in such a relatively small area will facilitate development of the resource. Mobil and Shell, the operators of most of the major discoveries, have held preliminary discussions to examine the feasibility of a joint development project. In addition, at the time of writing Mobil is drilling an exploration well in the area which could add to existing reserves.

SMALL OILFIELD DEVELOPMENT

Assessment of the viability of small-scale oilfield development continued in 1988. Analysis to date indicates that commercial development is possible for small pools such as Cohasset and Panuke, utilizing a converted jack-up drilling rig as a production platform and transporting the oil to shore using shuttle tankers. No firm timetable has been established for development of these oilfields. Given stable oil prices at acceptable levels however, it is estimated the fields could be brought into production in under two years.

GAS MARKETS

The primary potential market for Nova Scotia natural gas continues to be the northeastern United States. Canada exported 50.5 bcf (1.78 billion m^3) of gas to this region in contract year 1986/87, an increase of 12 percent. Despite this growth in volume, total revenues declined 13 percent due to a 22 percent drop in prices. This reduction was due primarily to the decline in competitive refined product prices.

Several factors indicate that this market remains attractive to Canadian suppliers. Firstly, the U.S. Federal Energy Regulatory Commission (FERC) issued a call for proposals to serve this region with new gas supplies. Thirty-one applications were filed for the FERC's consideration. Secondly, the Northeast energy market has shown significant growth over the past decade compared to other regions of the United States. Thirdly, gas penetration in the Northeast is currently the lowest in the U.S.

U.S. regulatory approval of new projects to serve the region remains complicated. New approvals are not expected before the early 1990's.

OIL PRICES

Crude oil prices continued to reflect soft oil markets over the last year, as supply exceeded demand. Two factors contributed to this situation; continued high production by non-OPEC producers and an inability by the OPEC cartel to enforce its members to adhere to production quotas. At present, world crude oil prices are approximately U.S. $2.00 per barrel below the average 1987 price of U.S. $17.86. In the short term, prices are expected to remain at current low levels. However, a firming of international crude oil markets is expected in the early 1990's, as production by non-OPEC countries declines.

Oil produced offshore Nova Scotia will be sold at prevailing international market prices. Markets will be determined by the compatibility of the crude oils' characteristics with the individual refiner's needs.

Figure 8
Major Disco
Vicinity of S

overies In Close
Sable Island

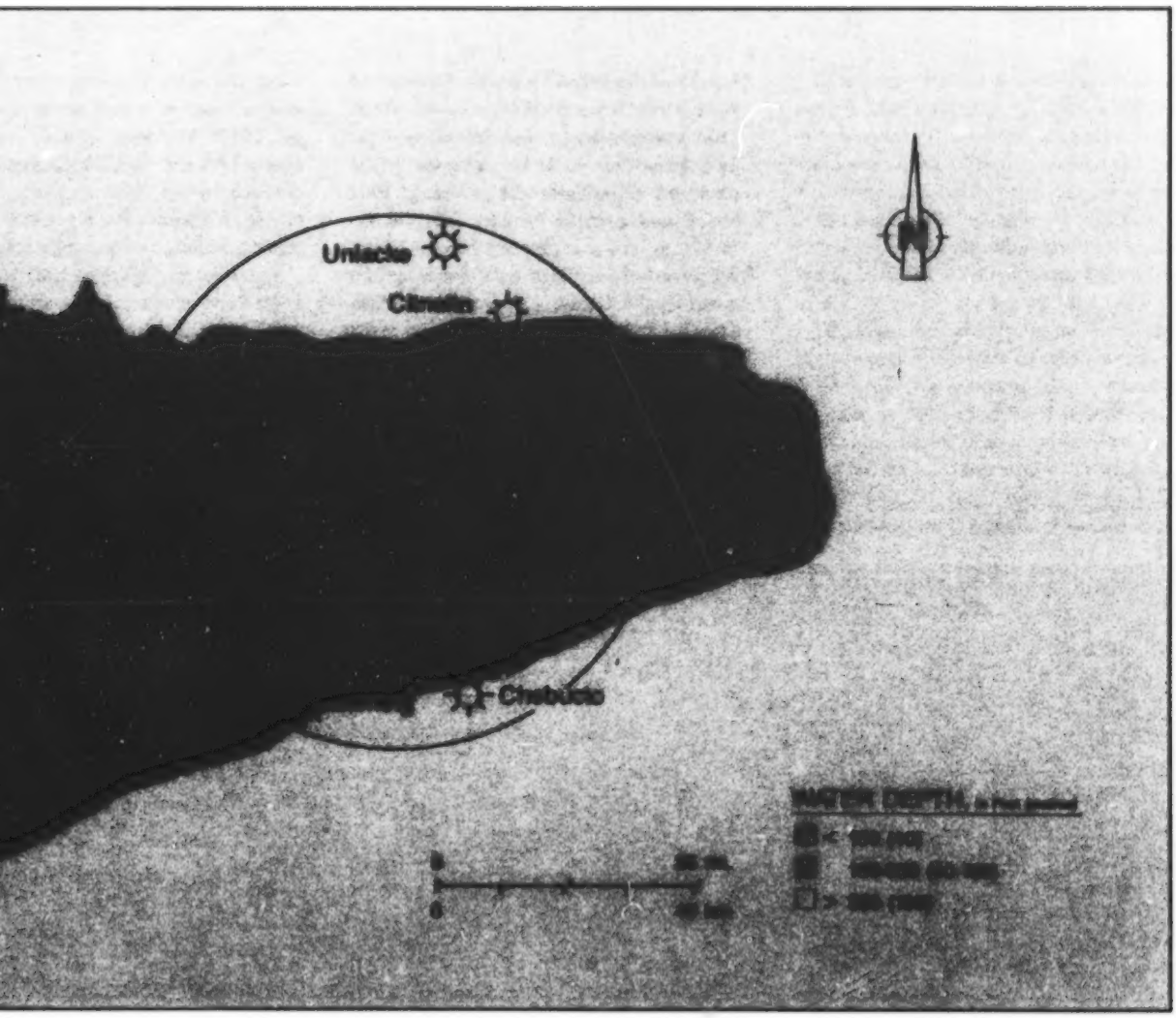
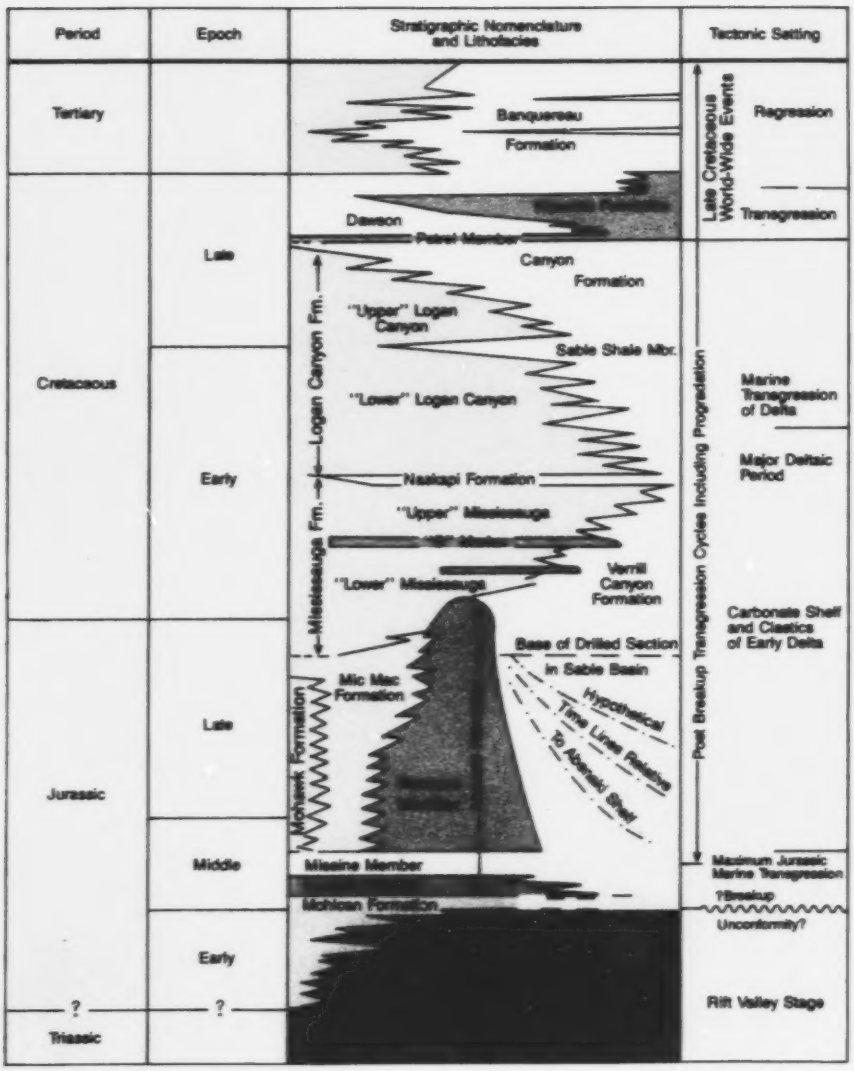


Figure 10

Stratigraphic Diagram of Lithologic Units



were buried deep enough to generate hydrocarbons. Deep salt layers and/or basement block configuration and faults contributed the necessary relief and trapping mechanisms for the formation of oil and gas fields in these areas. The Sable Sub-basin and Abenaki Sub-basin were centers of maximum deposition of sediment. Most of the major hydrocarbon finds to date occur near centers of maximum deposition in these areas.

RESERVOIRS AND TRAPS

Hydrocarbons have been found in reservoirs ranging in age from Late Cretaceous to Early Jurassic time. The most consistent and successful oil and gas discoveries have been related to down-to-basin structural faults that extend through the Sable Sub-basin. The fault system parallels and is seaward of the Baccaro carbonate front. Gas-producing zones have been discovered in interbedded sandstones and shales of the Late Jurassic and Early Cretaceous age, in the MicMac and Missisauga Formations. These sands are often overpressured and many wells in the area have encountered such overpressured sands (Figure 11). There has been a strong interest in finding overpressured reservoirs because they typically have high flow rates due in part, to higher than normal porosities.

Recently drilling has been directed at shallow reservoirs of more normal pressure, reflecting the industry's attempt to discover additional reserves but at decreased cost.

A new exploration fairway has developed south of Sable Island where the Alma, Glenelg, North Triumph, and Chebucto fields have been drilled. The Cretaceous age sands in the area show promise of productive reservoirs which could add additional reserves to the previously discovered fields at Venture, Thebaud, and South Venture.

Other recent drilling targets have been oil accumulations along the Cohasset-Panuke trend. The oil is a light crude (ranging from 48-56° API) and requires less refining than conventional crude (35-40° API). Such oils occurring at shallow depths 7,050-7,875 feet (2 150-2 400 m) may be the focus of early development. As it has thus far been determined, the oils appear to have been sourced from formations at deeper depths and seem to be related to the ancient Baccaro carbonate bank complex .

Maturation studies of the organic material in the rocks and oil typing suggest this area is oil prone as opposed to the gas rich areas elsewhere on the Scotian Shelf. The Baccaro bank is a mappable geologic feature and recent drilling (Cohasset, Panuke, Como) suggests other accumulations of oil may be predicted and drilled. The unique nature of the light oil coupled with the geological controls make this a unique target area.

Hydrocarbons have also been found associated with salt dome structures that underlie much of the Sable Island area. These structures have proven to be severely faulted and, as a result, hydrocarbon distribution is complex. Many such structures were identified during drilling in the 1970's.

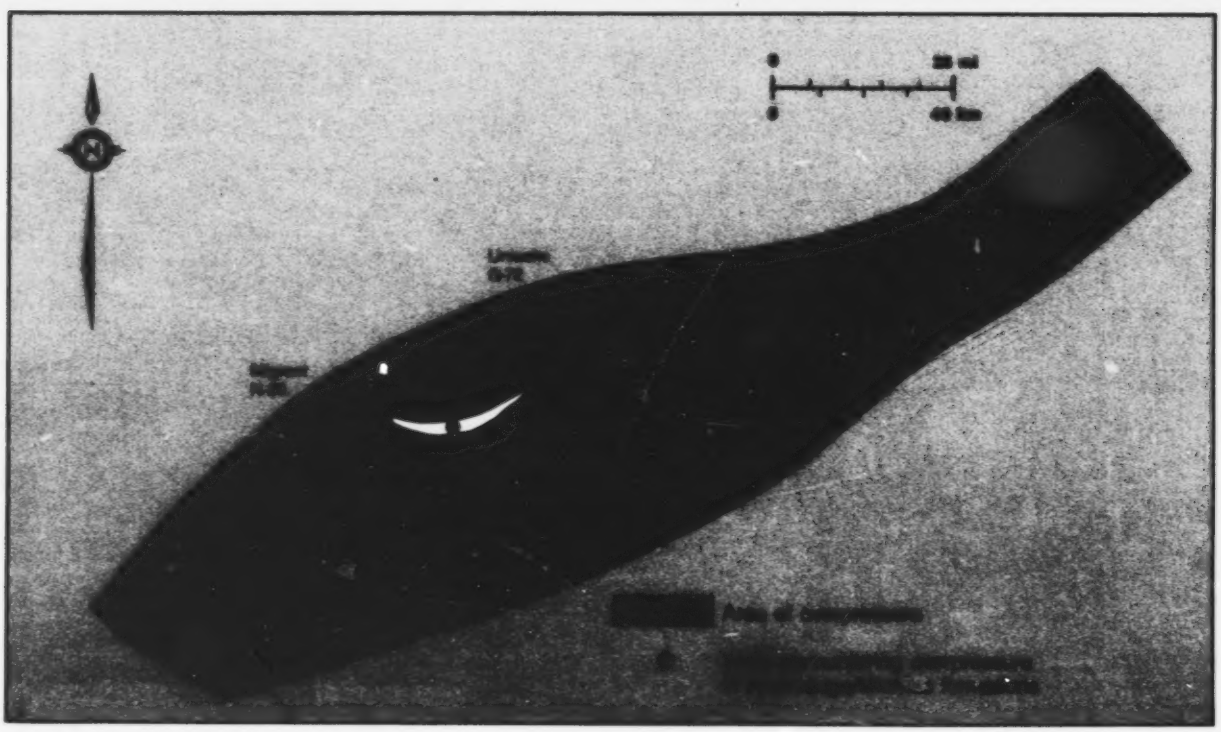
A search for turbidite fans — deposits having similar characteristics to deltas and formed by slumping along the slope — has been pursued along the deep water areas of the Scotian Slope. In some areas of the world, such deposits have been prolific producers.

Current drilling by Mobil Oil, at the South Sable B-44 location, is investigating the possibility of yet another northeast-southwest productive trend south of Sable Island.

As the understanding of the geology of offshore Nova Scotia matures and drilling technology advances, new areas and new drilling targets will undoubtedly be identified.

Figure 11

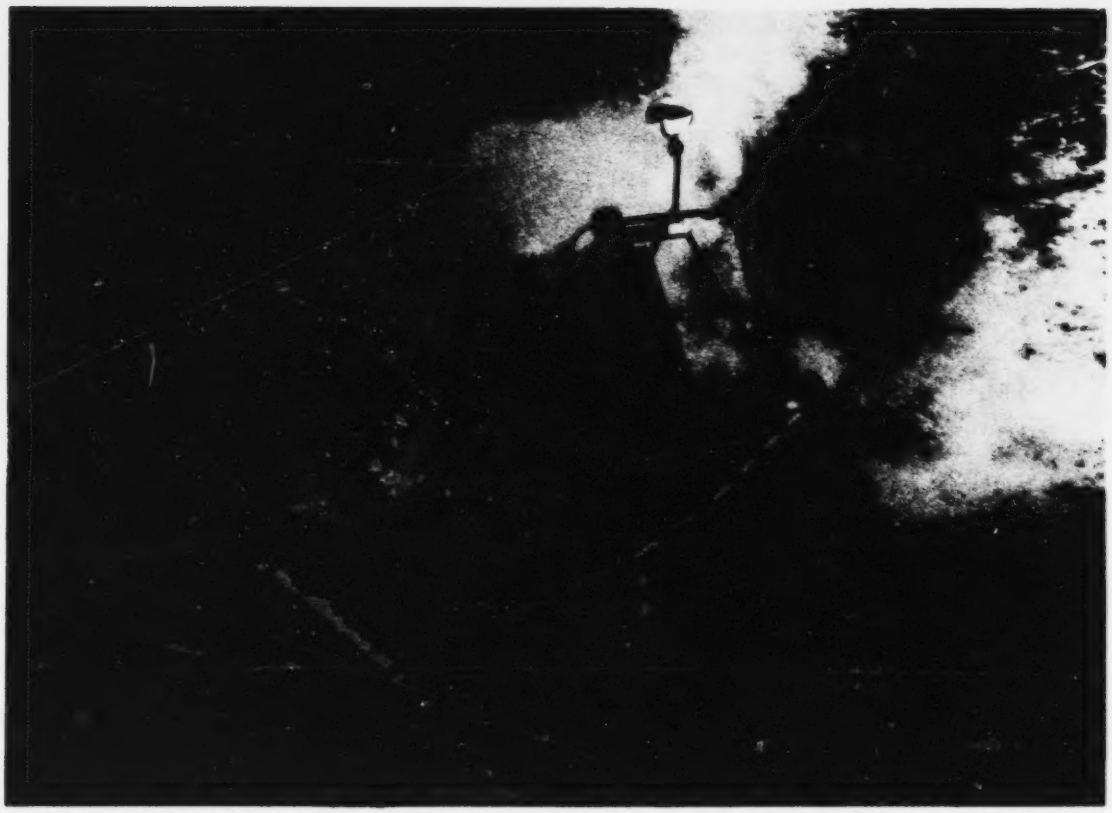
Wells Encountering Overpressured Formations in the Sable Island Area



7 OFFSHORE SAFETY AND TRAINING

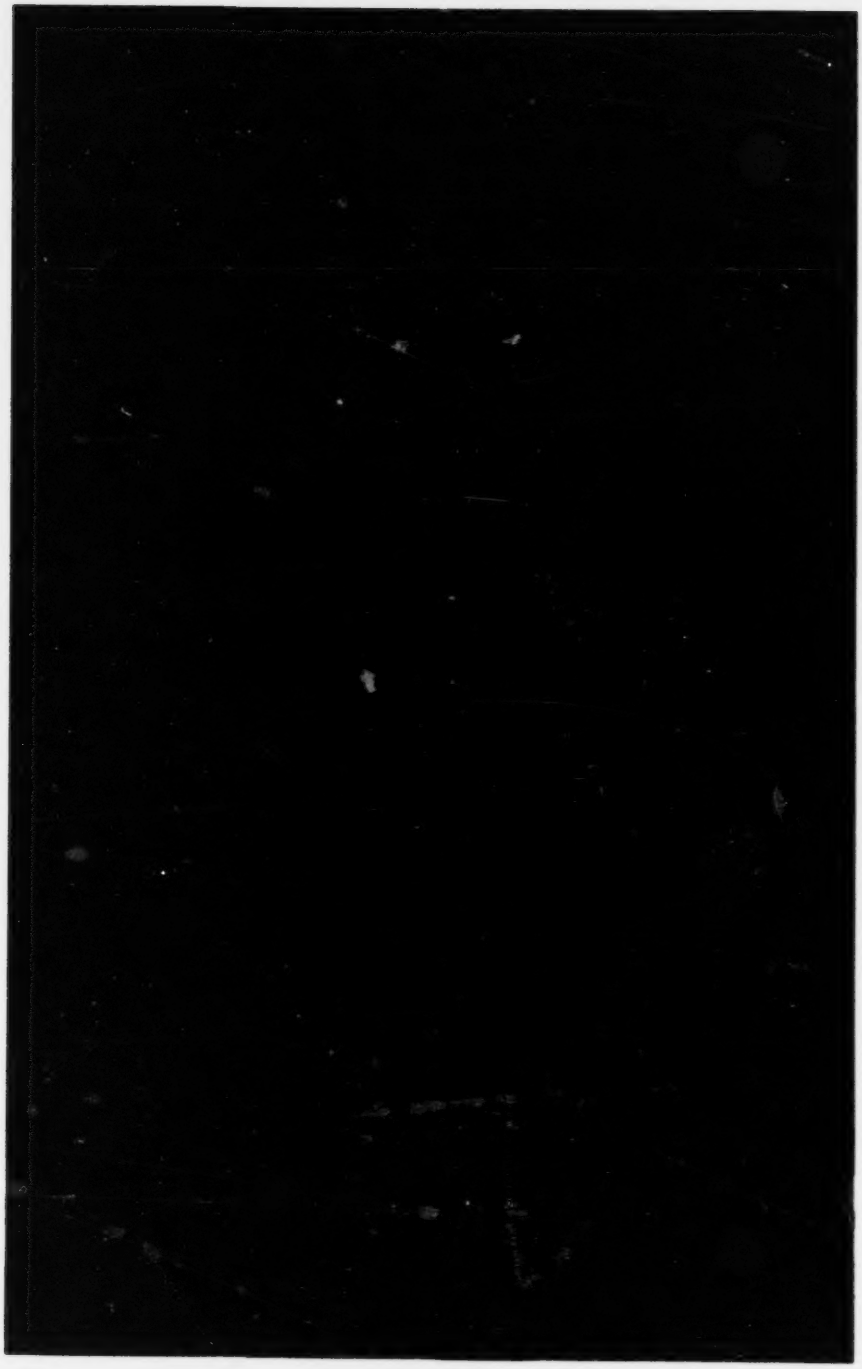
Offshore safety and training requires an ongoing effort and commitment by operators, drilling contractors, and service companies. Those working offshore must receive sufficient training to be aware of the increased risks of working offshore and of the need to be safety conscious at all times. The Department of Mines and Energy, in co-operation with the Canada Oil and Gas Lands Administration (COGLA), the Newfoundland Department of Energy, the Canada-Newfoundland Offshore Petroleum Board, and the Canadian Coast Guard regularly reviews and evaluates the safety practises and capabilities of the Scotian Shelf operators. The department continues to participate in joint industry/government groups and task forces set up specifically to address conflicts and deficiencies in safety and training regulations.

Several Nova Scotia based organizations contribute to improve the level of offshore safety. Survival Systems' offshore training centre provides a variety of safety and survival courses for organizations which operate in the offshore. These include offshore operators, drilling contractors, the Canadian Armed Forces and Canadian Coast Guard personnel. Courses incorporate the latest in approved survival and fire fighting techniques and up-to-date technology and equipment. The Coordination and Organization Research and Development Group (CORD) conducts various safety-related projects. They evaluate immersion suits worn by offshore rig workers travelling by helicopter to and from rigs and survival suits to be worn during emergency rig abandonment operations.



Fast rescue craft used in oil rig and supply vessel crew training programs. Photo courtesy Survival Systems

8 SABLE ISLAND



Christmas trees used in a Mobil Oil sponsored program to combat erosion problems, arrive on Sable Island.
Photo: Zoe Lucas

During oil and gas exploration activity offshore Nova Scotia, various research programs on Sable Island have been related to and supported by the oil and gas industry. Of these, terrain management programs have contributed a great deal to the development of techniques for restoration and management of the island's fragile vegetated dune systems.

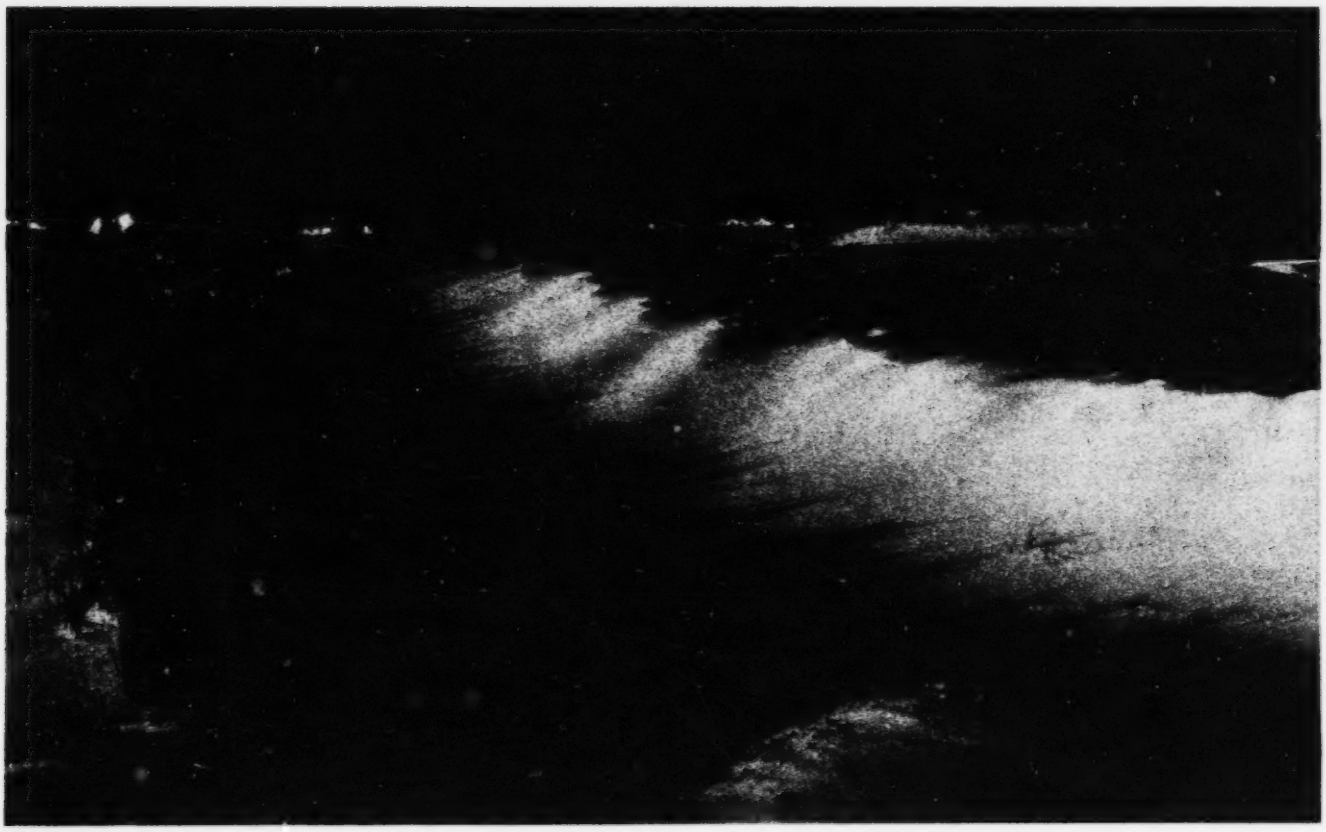
Mobil Oil's early Scotian Shelf exploration focused on the west end of Sable Island. Structures remaining at the west end site included a series of well heads, pipe racks and assorted platforms, snow-fencing, and a cement pad. In 1986, Mobil completed a well-abandonment and clean-up program at the site. Above ground, portions of the pipe racks were cut away and removed. However, because of sand loss in the area, within several months pipe rack remnants were once again visible.

Beginning with preliminary efforts in August 1987, vegetation management is now used to initiate stable dune development at the pipe rack and well head sites.

Earlier terrain restoration work on Sable Island (1976-1983) was carried out by Zoe Lucas for the Sable Island Environmental Advisory Committee. The work was funded by Mobil Oil, the Nova Scotia Department of Mines and Energy and the Canada Oil and Gas Lands Administration. Logistical support was provided by the Atmospheric Environment Service and Transport Canada. This work focused on a number of sites where erosion caused by storm waves or vehicle use threatened critical areas. During that period restoration methods included wood-slat snow-fences and transplanting marram grass to provide sand build up and stabilizing vegetation cover.

An extensive terrain management program in 1988 was initiated and funded by Mobil Oil Canada Ltd. in cooperation with the Nova Scotia Department of Mines and Energy. Work in 1987 experimented with Christmas trees as an alternative to snow-fence. These trees were harvested during November and December of the previous year, and were surplus. The Sable program was able to make use of material that would otherwise have been burned.

The results indicate that trees are an effective alternative to snow-fencing. In 1988, 6000 Christmas trees were provided by various forestry companies in Nova Scotia. They were delivered to Zoe Lucas on the island by Mobil Oil via supply vessel, and air lifted to the work site by helicopter.



Surplus christmas trees arranged in rows to provide sand build up at a former drill site on Sable Island. Photo: Zoe Lucas

1 MANAGEMENT OF ONSHORE LANDS

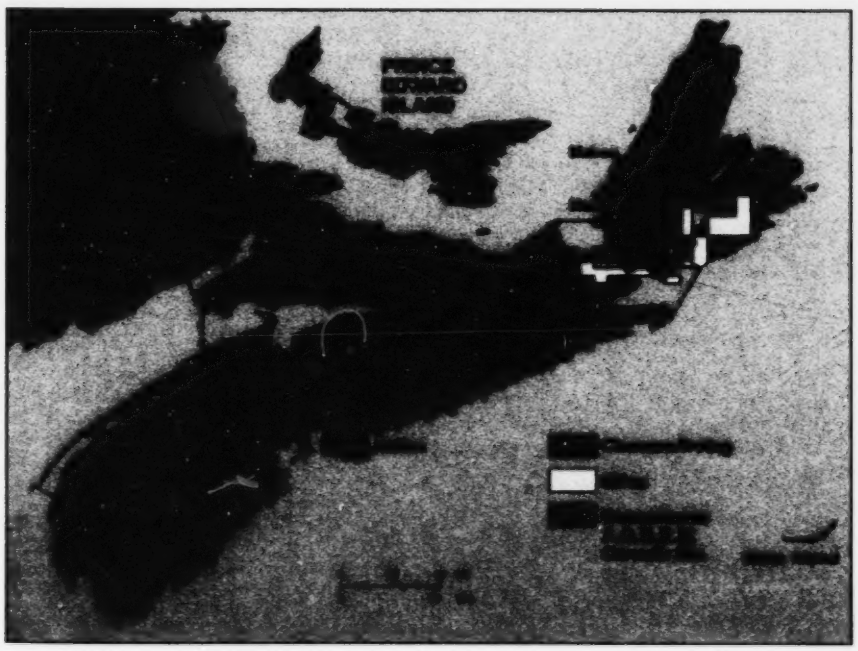
Figure 12

Summary of Onshore Oil and Gas Rights Holders, June 1988

Licensee	Negotiated Area (acres)	(hectares)	Rentals Paid ($)
Chevron Canada Resources Ltd.			
1. Cape Breton	1,469,743	594,805	71,376.60
2. Cumberland	2,066,382	836,265	100,351.80
3. Miles	321,944	130,342	15,641.04
4. Consultants A.G.R.E.N. Canada Inc.	46,780	18,648	2,237.76
Total	**3,904,849**	**1,580,060**	**189,607.20**

Figure 13

Onshore Exploration Agreements Negotiated



ISSUANCE OF ONSHORE OIL AND GAS EXPLORATION RIGHTS

Most exploration is conducted on lands subject to an Exploration Agreement. This gives the agreement holder the exclusive right to explore those lands and the exclusive right to apply for a production lease. The Petroleum Resources Act provides that in most cases, exploration rights will be issued through a competition bidding process.

A party wishing to obtain an Exploration Agreement may contact the department at any time to request that specific land be posted for bids. In addition, from time to time the department may issue a call for nominations of open land from industry.

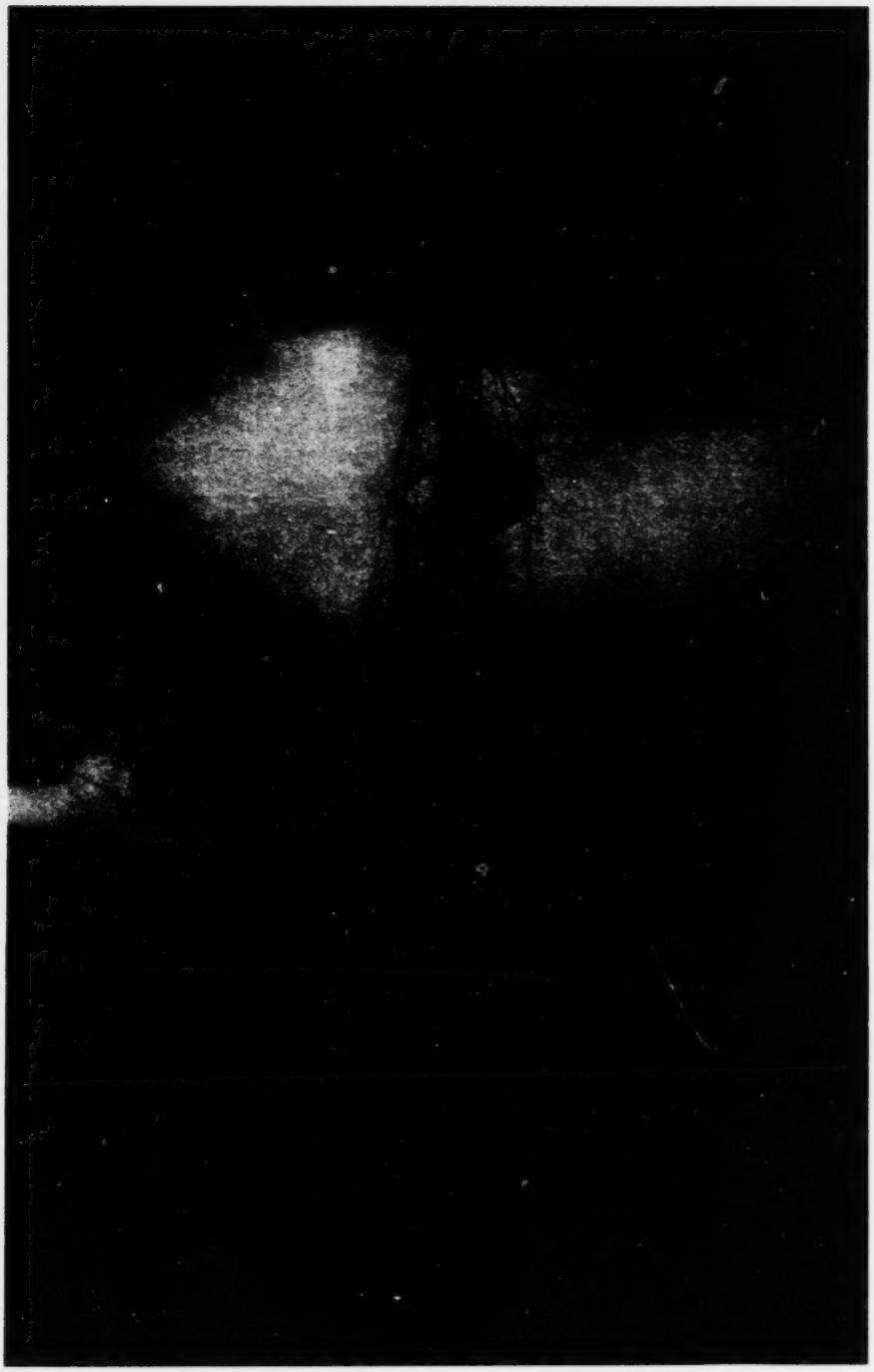
When the department receives a nomination it may recommend to the Minister that a call for exploration proposals be issued. A call will specify the lands to be explored, the manner of submitting proposals and the criteria by which the Minister will evaluate the proposals. All calls are open for a minimum of sixty days.

The department has received expressions of interest from several parties interested in acquiring onshore exploration rights. At the present time a call for nominations is being prepared and a call for exploration proposals is tentatively planned for later this year.

EXPLORATION AGREEMENTS

Current onshore exploration agreements are summarized in Figures 12 and 13. The first three agreements shown in figure 12 entered their final year on May 1, 1988. These lands will revert to the Crown unless — prior to May 1, 1989 — the agreement holder drills an exploratory well on the agreement lands and incurs exploration expenditures of not less than $1.61 per acre ($4.00 per ha). If the agreement holder complies with these requirements, they may elect to negotiate a three year renewal of the agreement. Similar provisions apply to the fourth E.A. which enters its final year on July 2, 1988.

2 EXPLORATION ACTIVITY



Onshore drilling activity in Cape Breton. Photo: Reg Morrison

OIL AND GAS

Onshore exploration was resumed in the past year. Following the completion of geological work, Chevron spudded the Irving Chevron Mull River #1 well in the Mabou-Lake Ainslie area. At the time of writing the well was still drilling.

The Department of Mines and Energy, through funding by the Canada-Nova Scotia Mineral Development Agreement, is undertaking a study on the petroleum source rock potential. This study, which is scheduled for completion in the spring of 1989, is intended to identify regions of the province which are most prospective for petroleum exploration. To date the results of the field work and laboratory analyses have been useful in helping to clarify some of the source rock and hydrocarbon migration relationships.

COAL GAS

For many years coal gas was regarded as a dangerous byproduct of underground coal mining which was vented to the atmosphere. The dramatic increase in energy costs of the 1970's initiated a re-evaluation of the energy potential of coal gas. In many parts of the world coal gas is now being produced commercially as a valuable energy resource.

Since the Petroleum Resources Act defines petroleum to include coal gas, the exploration, development and production of coal gas falls under the ambit of that Act. Pursuant to the Act, coal gas regulations were promulgated on December 1, 1987. These regulations together with the relevant provisions of the Act, establish a comprehensive regulatory regime designed to ensure that the considerable coal gas reserves of the province are exploited in a safe and efficient manner particularly when the coal gas operations are conducted in close proximity to present or future coal mine sites.

There are two ways to produce coal gas. The most common method is to drain coal gas from the coal in association with underground mining. A more recent development involves the drilling of wells from the surface into the coal bed much as one would drill a petroleum well.

During the past year the Petroleum Resources Section conducted negotiations with several groups interested in developing coal gas for commercial purposes. On May 31, 1988 the Minister concluded a coal gas exploration agreement with the Cape Breton Development Corporation covering 184,163 acres (74 560 ha). The agreement is for a term of five years and requires the agreement holder pay annual rentals of 4.8¢ per acre (12¢ per ha). The agreement holder must also begin construction of facilities which will utilize a minimum of 2 million cubic feet (56 620 m^3) per day of coal gas prior to the end of the term.

At the time of printing, discussions concerning a second coal gas exploration agreement are ongoing.

3 HISTORY

Petroleum samples taken from various regions in Nova Scotia at the turn of the century. Photo: Reg Morrison

Oil and gas occurrences in Nova Scotia were reported as early as the middle of the last century when an oil seep was discovered on the shores of Lake Ainslie, Inverness County. Since then, 25 significant surface shows of petroleum and various hydrocarbon occurrences have been noted in wells and drillholes throughout the province. These include significant petroleum shows in about a third of the 98 petroleum wells drilled since 1869 and in at least 68 wells drilled for purposes other than petroleum exploration. The most recent show occurred in a salt/potash exploration hole drilled by the Nova Scotia Department of Mines and Energy in 1988 near Alton, Colchester County. The hole encountered significant quantities of gas while drilling through basal Windsor Group marine sediments. The gas flowed for over three weeks with no apparent natural depletion. Due to overpressure conditions and the limitations of the drilling rig the hole was abandoned.

After the Lake Ainslie Pioneer Oil & Salt Co. drilled the first recorded Nova Scotia well in the Mabou area near Lake Ainslie, Cape Breton Island, in 1869, onshore drilling activity reflected the excitement and interest in petroleum exploration prevalent in the rest of North America at the time. Twelve of the 19 wells drilled between 1869 and 1905 were concentrated in the Mabou-Lake Ainslie area, where surface seepages of oil had been noted during the mid-1800's (Figure 14). The remaining 7 wells were drilled near Cheverie, Hants County, and Stellarton, Pictou County.

Between 1899 and 1906, an extensive exploration program in southeastern New Brunswick resulted in the drilling of 72 wells and led to a commercial oil and gas discovery in 1909 at Stoney Creek, situated about 9 miles (14.5 km) south of Moncton. The Stoney Creek discovery stimulated the drilling of 7 wells centered in the Mabou-Lake Ainslie area of Nova Scotia between 1910 and 1915. This area and other parts of northern Nova Scotia lie within a similar section of the regional Carboniferous basin as the Stoney Creek discovery.

Figure 14

Number of Onshore Wells Drilled by Area and Year, 1869-1988

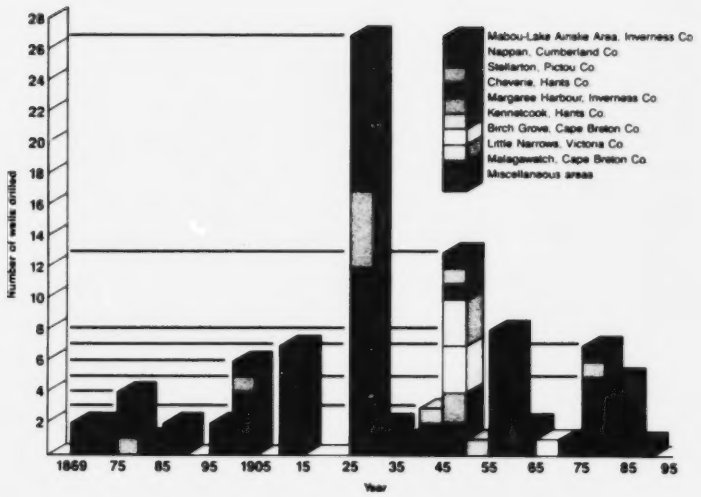
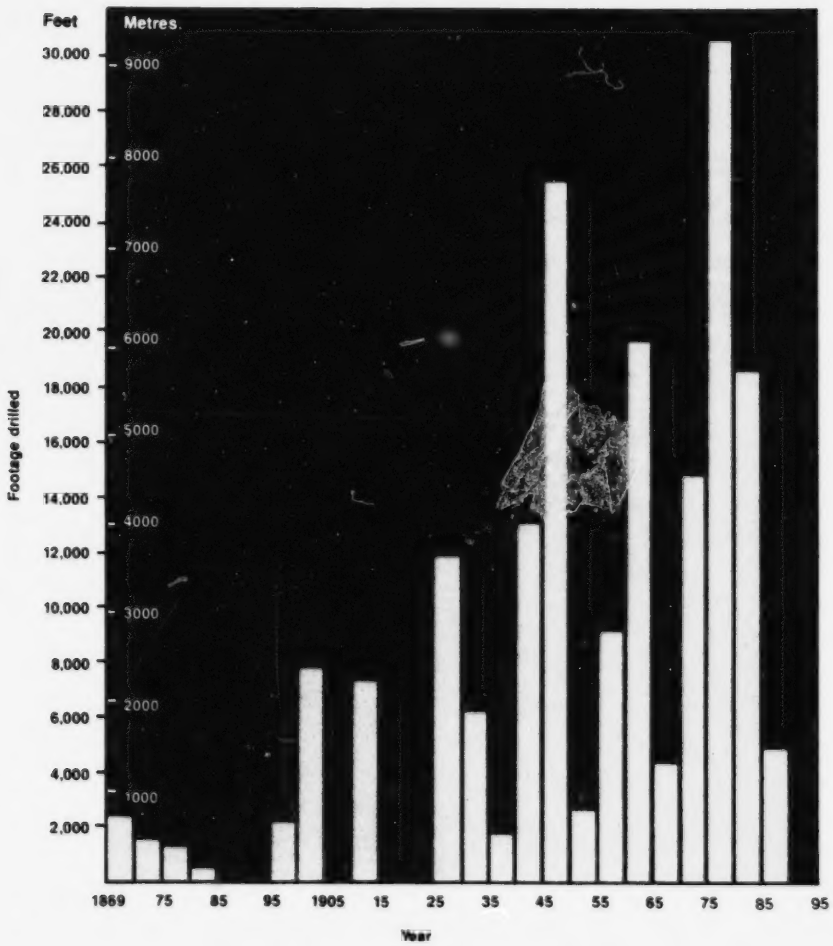


Figure 15

Footage Drilled by Year Onshore Nova Scotia, 1869-1988



From 1926 to 1930, Eastern Gulf Oil Company conducted a 17-well diamond drilling program in Inverness County after encouraging field reconnaissance in the area. During the same period, Imperial Oil Limited finished 10 wells in the Nappan area of Cumberland County. With the Depression of the 1930's came a significant decrease in exploration activity and only 1 well was drilled between 1932 and 1943.

On March 28, 1942, an "Act to Regulate the Search for Petroleum and Natural Gas" was enacted in Nova Scotia. Previously, petroleum resources were regulated, along with all other mineral resources in Nova Scotia, under the Mines Act.

Interest in petroleum was revived in North America during World War II, a result of the loss of East Indian oilfields to the Japanese. Drilling activity increased between 1944 and 1949 when 13 wells were drilled in Nova Scotia by 6 operators.

A total of 97 wells have been drilled onshore by at least 21 operators. The peak years for drilling activity were between 1925 and 1930 when a record 27 wells were drilled in the province. The total footage drilled was clearly greater after the 1940's (Figure 15) and strongly reflects the advancement in drilling technology and the deeper exploration plays of recent years.

In 1956, the Petroleum and Natural Gas Act was passed to guide exploration and production activities for onshore petroleum resources.

Drilling activity picked up in the late 1950's and continued at an increased level into the early 1960's. A major contributor to activity was Imperial Oil Limited, whose exploration program in the Mabou-Lake Ainslie area of Cape Breton accounted for 8 of the 10 wells drilled during this time.

In July 1984, the new Petroleum Resources Act was proclaimed, replacing the Petroleum and Natural Gas Act (1956). Regulations pursuant to this new Act were brought into effect on October 30, 1985.

Chevron Standard's oil show at Malagawatch on Cape Breton Island in late 1979 was the highlight of 4 wells drilled between 1975 and 1980 by Chevron, and 3 other wells drilled by separate companies during the same period. In 1981 Chevron drilled the Scotsburn #2 well in the Scotsburn area and in 1988 Chevron spudded the Irving Chevron Mull River #1 near Lake Ainslie in Cape Breton.

4 GEOLOGY

Most onshore petroleum exploration has concentrated on rocks of the Carboniferous age. Exposures occupy about a third of the Province in several sedimentary basins, including the Minas Sub-basin, Cumberland Sub-basin, Stellarton Gap-Pictou Sub-basin, Antigonish Sub-basin, and Inverness-Mabou Sub-basin. (Figure 16).

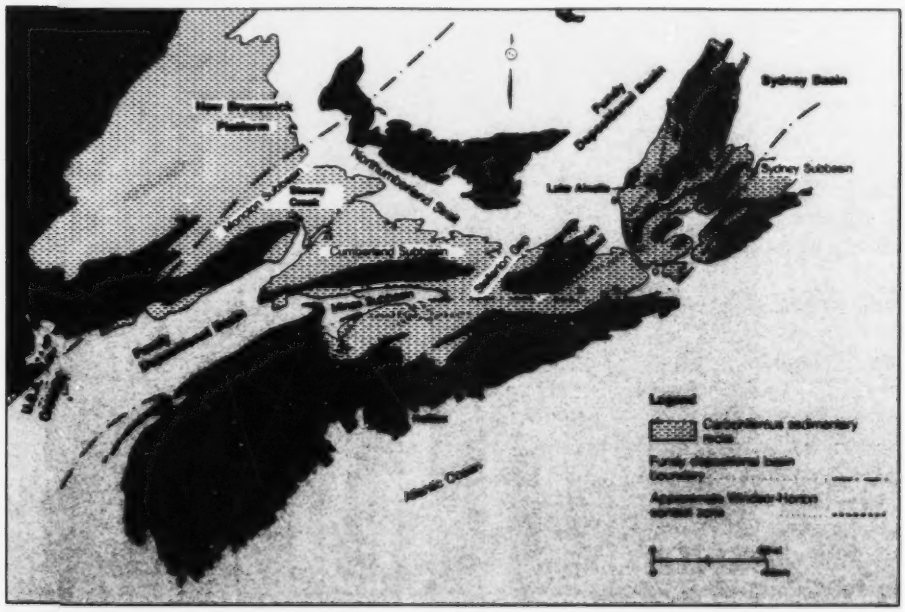
The Carboniferous rocks were formed from sediments first deposited in narrow elongate basins bordered to the northwest by uplands in New Brunswick and to the south by an uplifted region of pre-Carboniferous rocks in Nova Scotia. The first sediments were deposited in the Fundy Depositional Basin and came from both bordering areas. These sediments form the Horton Group and consist of red to grey sandstone, conglomerate, siltstone, and shale.

A commercial oil and gas field in Horton Group rocks in the Albert Formation of New Brunswick is currently producing from a section of the same regional Carboniferous basin which extends through much of Nova Scotia. The Stoney Creek field in the Moncton Sub-basin produced 28.6 billion cubic feet (809 million m^3) of gas and 800,000 barrels (127,500 m^3) of oil between its discovery in 1909 and the end of 1987. In 1987 gas production at Stoney Creek was 64 million cubic feet (1.72 million m^3) and oil production 3,100 barrels (495 m^3).

Overlying the Horton Group strata are younger Carboniferous rocks of the Windsor Group, consisting of thick members of massive to poorly bedded red and greenish-grey mottled siltstone, shale, and sandstone, interbedded with gypsum, anhydrite, shale, and thin tabular

Figure 16

Carboniferous Age Sediments Onshore Nova Scotia



sequences of limestone and dolomite. Thick salt deposits occur at a number of localities and have had a noticeable effect on deformation in some areas. Salt flowage in some of the basins accounts for salt diapirs, domes, and ridges.

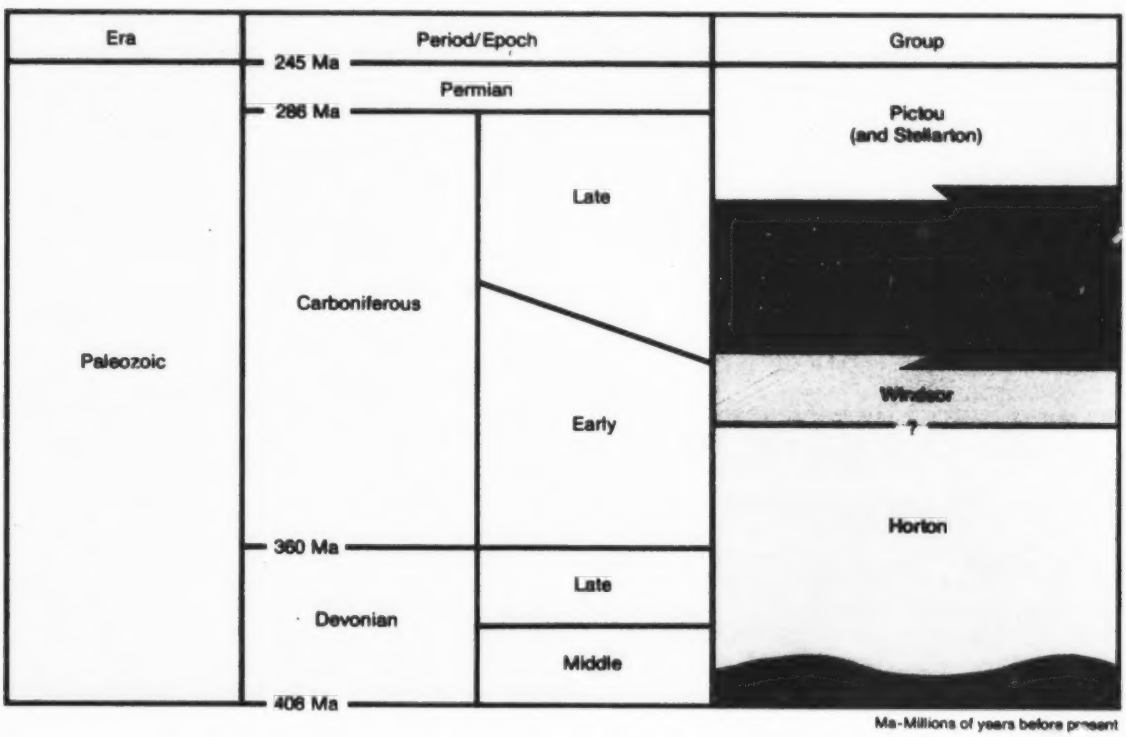
The Canso Group lies above the Windsor Group and contains mainly thinly laminated red and grey shales, sandstone, and minor limestone. Rocks of the Riversdale Group, thick deposits of coarse clastics (red and grey sandstone and shale), non-marine red and grey sandstone, siltstone, shale, and coal were deposited later. (Figure 17).

The Cumberland Group of the Late Carboniferous contains appreciable amounts of coal. Rocks of the group lie over Carboniferous and older strata and include non-marine red and grey conglomerate, sandstone, shale, and mineable coal seams.

During the deposition of the upper part of the Cumberland Group, non-marine fluvial and fluvio-lacustrine red and grey sandstones, shales,and minor conglomerates of the Pictou Group, were deposited in other areas. These Pictou sediments unconformably overlie older Paleozoic rocks and onlap the older metamorphic basement rocks. In the Late Carboniferous, swamps flourished and therefore thick coal deposits accumulated in a number of sub-basins.

The petroleum potential of any area depends on a number of conditions. First is the presence of organic-rich source rocks and a level of maturation which has resulted in the generation of hydrocarbons. Second is the presence of reservoir-quality rocks and migration of the hydrocarbons from the source rocks to the reservoir rocks. Subsequent to the first two conditions is the development of a hydrocarbon trap such that the hydrocarbons can not escape to the surface. The Carboniferous strata of Nova Scotia contains all of these conditions and has a high petroleum potential. It contains both organic-rich source rocks and suitable reservoir rocks. Within this strata is the potential for petroleum traps which is related to salt movements, faulting, carbonate-reefs, folding, porosity-permeability pinchouts, and unconformities.

Figure 17
Geological Time Scale



APPENDICES

1 DIRECTORY OF OFFSHORE WELLS

The wells are arranged by "Spud Date".
Data current to June 1, 1988

ABBREVIATIONS

RT	Rotary Table
KB	Kelly Bushing
GL	Ground Level
P&A	Plugged and Abandoned
P&S	Plugged and Suspended

WELL SYMBOLS

- Drilling
- Temporarily Suspended
- Plugged and Abandoned
- Significant Gas
- Gas Show
- Significant Oil
- Oil Show
- Significant Oil and Gas
- Oil and Gas Show

	WELL NAME	LATITUDE LONGITUDE	DRILLING UNIT	SPUD DATE RIG RELEASE	RT ELEVATION WATER DEPTH FEET (M)	TOTAL DEPTH IN FEET (M) WELL STATUS
1	Mobil Sable Island C-67	43°56'04.9" 59°55'01.4"	Bawden Rig 18	67-06-07 68-01-02	26.9 (8.2) KB 12.8 (3.9) GL	15,106 (4604.3) P&A
2	Shell Onondaga E-84	43°43'16.14" 60°13'17.41"	Sedneth 1	69-09-01 69-11-11	85 (25.9) 190 (57.9)	13,085 (3988.3) P&A
3	Shell Oneida O-25	43°14'57.36" 61°33'36.49"	Sedneth 1	69-11-16 70-02-10	85 (25.9) 270 (82.3)	13,516.7 (4119.9) P&A
4	Shell Naskapi N-30	43°29'46.78" 62°33'59.54"	Sedneth 1	70-02-16 70-03-19	85.3 (26) 312 (95.1)	7,235 (2205.2) P&A
5	Shell Mic Mac J-77	44°36'42.81" 59°26'10.86"	Sedneth 1	70-03-25 70-05-24	85.3 (26) 206 (62.8)	12,750 (3886.2) P&A
6	Shell Mohawk B-93	42°42'10.52" 64°43'53.50"	Sedco H	70-05-03 70-05-23	103 (31.4) 383.9 (117)	6,975 (2126) P&A
7	Shell Mississauga H-54	44°23'20.39" 59°22'47.56"	Sedneth 1	70-05-26 70-07-20	85 (25.9) 335 (102.1)	13,787 (4202.3) P&A
8	Shell Abenaki L-57	44°;16'34.49" 59°53'39.64"	Sedco H	70-05-28 70-07-06	103 (31.4) 359 (108.8)	7,147 (2178.4) P&A
9	Shell Onondaga O-95	43°44'48.09" 60°13'52.60"	Sedco H	70-07-09 70-08-16	103 (31.4) 176.8 (53.9)	10,874 (3314.4) P&A
10	Shell Huron P-96	44°35'47.10" 58°28'50.63"	Sedneth 1	70-07-22 70-08-27	85 (25.9) 190 (57.9)	9,903 (3018.4) P&A
11	Shell Iroquois J-17	44°26'31.37" 59°47'12.28"	Sedco H	70-08-18 70-09-06	103 (31.4) 194.9 (59.4)	6,845 (2086.4) P&A
12	Shell Mic Mac H-86	44°35'27.72" 59°27'03.12"	Sedneth 1	70-08-31 70-12-02	85 (25.9) 178.1 (54.3)	1;5,700 (4785.4) P&A
13	Shell Cree E-35	43°44'20.70" 60°35'55.89"	Sedco H	70-09-08 70-11-03	103 (31.4) 174.9 (53.3)	13,070 (3983.7) P&A
14	Shell Wyandot E-53	44°52'20.70" 59°23'54.05"	Sedco H	70-11-07 70-12-14	103 (31.4) 397 (121)	10,005 (3049.5) P&A
15	Shell Abenaki J-56	44°15'44.95" 59°53'03.22"	Sedneth 1	70-12-04 71-03-13	85 (25.9) 350 (106.7)	14,991 (4569.3) P&A
16	Shell Argo F-38	45°27'23.22" 58°50'24.34"	Sedco H	70-12-17 71-02-19	103 (31.4) 234.9 (71.6)	11,110 (3386.3) P&A
17	Shell Fox I-22	45°21'33.60" 59°33'16.00"	Sedco H	71-02-20 71-03-03	103 (31.4) 274.9 (83.8)	2,722 (829.7) P&A
18	Mobil-Tetco Esperanto K-78	44°47'31.26" 58°11'19.24"	Sedco H	71-03-09 71-04-24	103 (31.4) 225.1 (68.6)	11,615 (3540.3) P&A

	WELL NAME	LATITUDE LONGITUDE	DRILLING UNIT	SPUD DATE RIG RELEASE	RT ELEVATION WATER DEPTH FEET (M)	TOTAL DEPTH IN FEET (M) WELL STATUS	
19	Shell Erie D-26	44°55'03.52" 59°34'29.82"	Sedneth 1	71-03-16 71-04-11	85 (25.9) 321.9 (98.1)	7,795 (2375.9) P&A	
20	Shell Crow F-52	45°21'24.23" 59°08'22.73"	Sedneth 1	71-04-12 71-04-27	85 (25.9) 310 (94.5)	4,943 (1506.6) P&A	
21	Mobil-Tetco Dauntless D-35	44°44'08.26 57°20'46.64"	Sedco H	71-04-26 71-07-16	103 (31.4) 227 (69.2)	15,555 (4741.2) P&A	
22	Shell Sauk A-57	44°16'05.70" 58°37'44.41"	Sedneth 1	71-04-30 71-07-10	85 (25.9) 196.9 (60)	15,010 (4575) P&A	
23	Mobil-Tetco Sable Island E-48	43°57'2035 60°07'24.44"	Bawden Rig 14	71-05-28 ;71-10-15	21 (6.4) KB 0 (0) GL	11,820 (3602.7) P&A	
24	Shell Chippewa L-75	44°34'35.87" 58° 41'50.54"	Sedneth 1	71-07-12 71-08-12	81 (24.7) 222.1 (67.7)	6,975 (2125.9) P&A	
25	Shell Onondaga F-75	43°44'17.84" 60°11'36.25"	Sedco H	71-07-28 71-09-07	103 (31.4) 185 (56.4)	12,765 (3890.8) P&A	
26	Shell Triumph P-50	43°39'51.62" 50°51'02.36	Sedneth 1	71-08-04 71-10-10	85 (25.9) 295.9 (90.2)	15,077 (4595.4) P&A	
27	Shell Eurydice P-36	45°25'47.30" 60°04'46.97"	Sedco H	71-09-15 71-10-24	98.1 (29.9) 540 (164.6)	9,728 (2965.1) P&A	
28	Shell Chippewa G-67	44°36'20.50" 58°39'44.62"	Sedco H	71-10-28 71-12-18	98.1 (29.9) 230 (70.1)	12,040 (3669.8) P&A	
29	Mobil-Tetco Sable Island O-47	43°56'56.70" 60°06'38.08"	Bawden Rig 14	71-12-13 72-07-01	23 (7) KB 5.9 (1.8) GL	13,775 (4198.6) P&A	
30	Shell Mohican I-100	42°59'39.04" 62°28'51.32"	Sedco H	71-12-27 72-03-10	98.1 (29.9) 503 (153.3)	14,414 (4393.4) P&A	
31	Shell Marmora C-34	43°43'13.79" 60°05'21.93"	Sedneth 1	72-01-15 72-03-31	85 (25.9) 189 (57.6)	13,248 (4037.9) P&A	
32	Shell Primrose N-50	43°59'48.43" 59°06'51.63"	Sedco H	72-03-14 72-04-21	98.1 (29.9) 298 (90.8)	5,622 (1713.6) P&A	
33	Shell-Mobil-Tetco Eagle D-21	43°50'06.73" 59°34'09.21"	Sedco H	72-04-22 72-07-02	98.1 (29.9) 168 (51.2)	15,290 (4660.4) P&A	
34	Mobil-Tetco Sable Island I-H-58	43°57'27" 60°07'37"	Bawden Rig 9	72-06-03 72-08-27	35.1 (10.7) KB 5.9 (1.8) GL	9,971 (3039.2) P&A	
35	Mobil-Tetco-Thebaud P-84	43°53'59.53" 60°12'19.34"	Sedco H	72-07-08 72-10-13	93.8 (28.6) 85 (25.9)	13,500 (4114.8) P&A	
36	Mobil-Tetco Sable Island 2-H-58	43°57'27.14" 60°07'37.73"	Bawden Rig 9	72-10-06 72-12-31	34.8 (10.6) KB 5.9 (1.8) GL	9,050 (2758.4) P&A	
37	Shell Primrose A-41	44°00'05.68" 59°06'18.26"	Sedco H	72-10-15 73-01-27	98.1 (29.9) 359.9 (109.7)	11,865 (3616.5) P&A	
38	Mobil-Tetco Sable Island 3-H-58	43°57'27.20" 60°07'37.80"	Bawden Rig 9	73-01-01 73-03-21	34.8 (10.6) KB 5.9 (1.8) GL	12,270 (3739.9) P&A	
39	Mobil-Tetco Bluenose G-47	44°06'20.79" 59°21'27.35"	Sedco J	73-01-25 73-04-25	98.1 (29.9) 267.1 (81.4)	15,050 (4587.2) P&A	
40	Shell Primrose F-41	44°00'29.55" 59°07'06.52"	Sedco H	73-01-30 73-03-05	98.1 (29.9) 225.1 (68.6)	8,505 (2592.3) P&A	
41	Shell Marmora P-35	43°44'59.36" 60°04'47.58"	Sedco H	73-03-06 73-04-21	98.1 (29.9) 174.9 (53.3)	13,428 (4092.9) P&A	
42	Mobil-Tetco Sable Island 4-H-58	43°57'27.20" 60°07'37.80"	Bawden Rig 9	73-03-22 73-08-11	34.8 (10.6) KB 5.9 (1.8) GL	14,827 (4519.3) P&A	
43	Shell Tuscarora D-61	44°40'10.35" 58°55'10.85"	Sedco H	73-04-23 73-06-02	98.1 (29.9) 258.9 (78.9)	12,925 (3939.5) P&A	
44	Mobil-Tetco Cohasset D-42	43°51'06.52" 60°37'13.89"	Sedco J	73-04-27 73-07-16	103 (31.4) 135 (41.1)	14,525 (4427.2) P&S	
45	Shell Amoco Cap Rouge F-52	47°11'20.29" 61°08'15.32"	Sedco H	73-06-08 73-09-03	102 (31.1) 186 (56.7)	16,182 (4932.3) P&A	
46	Mobil-Tetco Sable Island 5-H-58	43°57'27.20" 60°57'37.80"	Bawden Rig 9	73-08-15 73-09-18	34.8 (10.6) KB 5.9 (1.8) GL	8,130 (2478) P&A	
47	Mobil-Tetco Sable Island 6-H-58	43°57'27.20" 60°07'37.80"	Bawden Rig 9	73-09-22 73-10-18	34.8 (10.6) KB 5.9 (1.8) GL	7,727 (2355.2) P&A	
48	Union et al Shell Ojibwa E-07	43°46'20.44" 61°46'14.42"	Sedco H	74-02-04 74-02-28	98.1 (29.9) 248 (75.6)	7,643 (2329.6 P&A	

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49	Mobil-Tetco-Texaco Citnalta I-59	44°08'42.58" 59°37'32.11"	Sedco J	74-02-04 74-04-29	98.1 (29.9) 310 (94.5)	15,010 (4575) P&S
50	Shell Demascota G-32	43°41'27.20" 60°49'54.00"	Sedco H	74-03-01 74-05-20	98.1 (29.9) 178.1 (54.3)	15,329 (4672.3) P&A
51	Texaco-Shell Intrepid L-80	43°49'35.78" 59°56'43.82"	Sedco J	74-05-18 74-08-15	103 (31.4) 143 (43.6)	13,655 (4162) P&A
52	Union et al Sambro I-29	43°38'35.04" 62°48'17.04"	Sedco H	74-05-23 74-06-27	98.1 (29.9) 634.8 (193.5)	10,071 (3069.6) P&A
53	Union et al Jason C-20	45°29'05.45" 58°32'28.27"	Sedco H	74-07-03 74-07-22	98.1 (29.9) 370.1 (112.8)	8,146 (2482.9) P&A
54	Union et al Hercules G-15	45°34'20.65" 58°47'13.06"	Sedco H	74-07-23 74-08-01	98.1 (29.9) 379.9 (115.8)	3,547 (1081.1) P&A
55	Murphy et al North Sydney P-05	46°34'46.24" 59°45'01.65"	Sedco H	74-08-10 74-09-07	98.1 (29.9) 206 (62.8)	5,449 (1,660.9) P&A
56	Union et al Montagnais I-94	42°53'40.71" 64°13'46.51"	Sedco H	74-09-12 74-09-29	98.1 (29.9) 370.1 (112.8)	5,400 (1645.9) P&A
57	Mobil-Tetco-Gulf Adventure F-80	45°19'27.54" 57°56'22.80"	Sedco J	75-01-13 75-02-22	98.1 (29.9) 324.1 (98.9)	6,559 (1999.2) P&A
58	Mobil-Texaco Sachem D-76	44°35'09.22" 57°41'58.29"	Sedco J	75-05-17 75-07-30	98.1 (29.9) 191.9 (58.5)	16,006 (4878.6) P&A
59	Shell Onondaga B-96	43°45'08.23" 60°14'09.63"	Sedco H	76-01-12 76-03-21	98.1 (29.9) 198.2 (60.4)	12,328 (3757.6) P&A
60	Petro-Canada Shell Mic Mac D-89	44°38'08.86" 59°28'18.93"	Sedco H	76-03-26 76-05-04	98.1 (29.9) 279.9 (85.3)	10,552 (3216.4) P&A
61	Petro Canada Mobil Hesper I-52	44°41'40.33" 57°52'32.24"	Sedco H	76-05-08 76-06-05	98.1 (29.9) 138.1 (42.1)	9,200 (2804.2) P&A
62	Shell et al North Sydney F-24	46°33'23.12" 59°48'45.47"	Sedco H	76-06-09 76-06-14	98.1 (29.9) 195.9 (59.7)	5,600 (1706.8) P&A
63	Petro Canada-Shell Penobscot L-30	44°09'43.55" 60°04'09.33"	Sedco H	76-07-18 76-09-23	98.1 (29.9) 451.1 (137.5)	14,000 (4267.2) P&A
64	Petro-Canada-Shell Wenonah J-75	43°34'34.43" 60°26'13.72"	Sedco H	76-09-26 76-11-15	98.1 (29.9) 218.8 (66.7)	12,040 (3669.8) P&A
65	Petro-Canada-Shell Moheida P-15	43°04'56.31" 62°16'44.32"	Sedco H	76-11-18 77-02-15	98.1 (29.9) 367.1 (111.9)	14,100 (4297.7) P&A
66	Shell-Petro-Canada Penobscot B-41	44°10'02.44" 60°06'34.50"	Sedco H	77-02-18 77-03-30	98.1 (29.9) 386.8 (117.9)	11,300 (3444.2) P&A
67	Mobil-Tetco-PEX Migrant N-20	43°59'56.24" 60°17'18.23"	Gulftide	77-07-29 78-01-23	85.6 (26.1) 44.9 (13.7)	15,317 (4668.7) P&A
68	Mobil-Tetco-PEX Thebaud I-94	43°53'43.67" 60°13'38.13"	Gulftide	78-02-26 78-07-03	98.1 (29.9) 91.9 (28)	13,000 (3962.3) P&A
69	Chevron-PEX Shell Acadia K-62	42°51'42.54" 61°55'00.21"	Ben Ocean Lancer	78-04-11 78-08-02	42 (12.8) 2841.9 (866.2)	17,343 (5286.1) P&A
70	Mobil-Tetco-PEX Cohasset P-42	43°51'48.23" 60°36'16.62"	Gulftide	78-06-09 78-07-10	100.1 (30.5) 111.9 (34.1)	8,500 (2590.8) P&A
71	Mobil-Tetco-PEX Cohasset L-97	43°56-37.19" 60°29'58.55"	Gulftide	78-07-13 78-11-13	100.1 (30.5) 70.9 (21.6)	15,984 (4871.9) P&A
72	Mobil-Texaco-PEX Venture D-23	44002'15.00" 59°34'21.00"	Gulftide	78-11-28 79-06-16	104 (31.7) 65.9 (20.1)	16,224 (4945) P&S
73	Mobil et al Venture B-13	44°02'11.61" 59°32'03.54"	Rowan Juneau	80-08-17 81-06-06	110.9 (33.8) 81 (24.7)	17,100 (5212) P&S
74	Mobil et al Venture B-43	44°01'45.01" 59°37'21.03"	Rowan Juneau	81-07-06 82-04-25	110.9 (33.8) 66.9 (20.4)	19,265 (5872) P&S
75	Petro-Canada et al Banquereau C-21	44°10'07.52" 58°34'00.24"	Bow Drill 1	81-12-02 82-08-01	88.6 (27) 272.3 (83)	16,375 (4991) P&A
76	Mobil et al Olympia A-12	44°01'03.27" 59°46'44.09"	Zapata Scotian	82-04-23 83-01-10	125 (38.1) 130.9 (39.9)	19,895 (6064) P&S
77	Mobil et al South Venture 0-59	43°58'52.83" 59°38'08.49"	Rowan Juneau	82-04-29 83-01-02	116.1 (35.4) 80-1 (24.4)	20,262 (6176) P&S
78	Petro-Canada et al Banquereau I-13	44°12'33.16" 58°31'49.38"	Bow Drill 1	82-08-02 82-12-27	88.6 (27.0) 319.2 (97.3)	17,021 (5188) P&A

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79	Petro-Canada et al West Esperanto B-78	44°47'03.40" 58°26'11.22"	SDS Vinland	82-08-22 83-05-05	76.4 (23.3) 298.9 (91.1)	18,711 (5703) P&A	
80	Shell et al Shubenacadie H-100	42°49'28.43" 61°28'42.81"	Sedco 709	82-11-05 83-02-12	79.1 (24.1) 4,839.2 (1475)	13,780 (4200) P&A	
81	Mobil et al Bluenose 2G-47	44°06'22.30" 59°21'23.05"	John Shaw	82-12-30 83-09-05	80.1 (24.4) 279.9 (85.3)	19,019 (5797) P&A	
82	Mobil et al Venture B-52	44°01'12.88" 59°38'07.76"	Rowan Juneau	83-01-19 83-10-27	111.5 (34) 65 (19.5)	19,554 (5960) P&A	
83	Mobil et al Arcadia J-16	44°05'43.58" 59°31'58.19"	Zapata Scotian	83-01-27 83-07-19	125 (38.1) 182.1 (55.5)	19,701 (6005) P&S	
84	Petro-Canada et al S.W. Banquereau F-34	44°03'15.63" 58°50'21.60"	Bow Drill 1	83-02-20 83-08-30	81.7 (24.9) 373 (113.7)	20,699 (6309) P&A	
85	Shell Petro-Can et al Glenelg J-48	43°37'39.00" 60°06'25.44"	Sedco 709	83-02-22 83-11-07	78.7 (24) 274.6 (83.7)	16,890 (5148) P&A	
86	Shell-Petro-Can et al Uniacke G-72	44°11'29.17" 59°41'09.75"	SDS Vinland	83-05-09 84-04-04	77.1 (23.5) 501.6 (152.9)	18,816 (5735) P&A	
87	Mobil et al Venture H-22	44°01'24.10" 59°33'06.10"	Zapata Scotian	83-07-26 84-04-16	125 (38.1) 78.7 (24)	19,501 (5944) P&A	
88	Husky/Bow Valley et al Glooscap C-63	43°12'09.85" 62°09'56.75"	Bow Drill 2	83-08-07 84-01-03	75.1 (22.9) 324.8 (99)	14,902 (4542) P&A	
89	Petro-Canada et al St. Paul P-91	47°10'57.88" 60°13'36.83"	Bow Drill 1	83-09-02 83-12-31	81.7 (24.9) 570.5 (173.9)	9,465 (2885) P&A	
90	Home Oil et al Louisbourg J-47	44°26'43.08" 58°21'26.02"	Glomar Labrador 1	83-11-25 84-10-13	125.3 (38.2) 207 (63.1)	19,826 (6043) P&A	
91	Shell-Petro-Can et al Alma F-67	43°36'18.49" 60°39'56.49"	Sedco 709	83-12-02 84-07-05	78.7 (24) 155.7 (68)	16,581 (5054) P&A	
92	Husky/Bow Valley Chebucto K-90	43°39'44.74" 59°42'52.05"	Bow Drill 2	84-01-06 84-08-02	74.8 (22.8) 357.6 (109)	17,175 (5235) P&A	
93	Husky/Bow Valley et al South Griffin J-13	44°22'39.89" 58°01'55.20"	Rowan Gorilla 1	84-01-08 84-08-20	129.9 (39.6) 208 (63.4)	19,393 (5911) P&A	
94	Petro-Canada et al Bonnet P-23	42°22'48.64" 65°03'01.89"	Bow Drill 1	84-01-14 84-04-04	82 (25) 438 (133.5)	14,226 (4336) P&A	
95	Husky/Bow Valley Evangeline H-98 (Re-entered Well)	43°17'26.85" 60°58'50.60"	Bow Drill 3 Bow Drill 2	84-03-27 84-06-16 84-08-08 84-11-01	70.9 (21.6) 570.9 (174) 73.8 (22.5) 570.9 (174)	11,040 (3365) 16,549 (5044) P&A	
96	Shell-Petro-Can et al South Desbarres O-76	44°05'56.07" 59°58'58.02"	SDS Vinland	84-04-17 84-10-13	77.8 (23.7) 226.4 (69)	19,813 (6039) P&A	
97	Petro-Can et al Dover A-43	44°22'09.02" 60°06'09.28"	Bow Drill 1	84-04-17 84-07-10	82 (25) 380.6 (116)	14,846 (4525) P&A	
98	Mobil et al West Venture N-91	44°00'45.82" 59°44'27.33"	Zapata Scotian	84-04-19 85-07-07	128.9 (39.3) 125 (38.1)	18,199 (5547) P&A	
99	Mobil et al West Venture C-62	44°01'02.78" 59°40'00.25"	Rowan Juneau	84-05-19 85-03-23	110.9 (33.8) 54.1 (16.5)	18,117 (5522) P&A	
100	Shell PCI et al Glenelg E-58 and E-58A*	43°37'17.20" 60°08'56.10"	Sedco 709	84-07-07 84-10-20	787 (24) 259.2 (79)	13,753 (4192) P&A	
101	Bow Valley/Husky et al Hesper P-52	44°41'50.95" 57°52'47.72"	Rowan Gorilla 1	84-08-22 85-05-01	132.9 (40.5) 146 (44.5)	15,632 (5679) P & A	
102	Mobil et al West Venture B-92	44°01'08.51" 59°43'59.68"	Glomar Labrador 1	84-10-24 84-12-13	121.4 (37) 137.8 (42)	2,369 (722) P&A	
103	Shell Petro-Can et al Glenelg H-38	43°37'19.33" 60°04'48.61"	Sedco 709	84-10-26 85-01-26	79.1 (24.1) 293 (89.3)	15,961 (4865) P&A	
104	Petro-Can Texaco et al Albatross B-13	42°41'10.67" 63°02'11.83"	Sedco 710	84-12-12 85-03-28	78.7 (24) 4,399.6 (1341)	13,274 (4046) P&A	
105	Home Oil et al Citadel H-52	44°11'25.07" 58°52'39.87"	Glomar Labrador 1	84-12-18 85-05-31	125.7 (38.3) 214.2 (65.3)	18,589 (5666) P&A	
106	Mobil et al West Venture N-01	44°00'58.80 59°45'51.69"	Rowan Gorilla	85-01-20 85-06-30	12.5 (38.1) 131.6 (40.1)	11,916 (3632) P&A	
107	Shell PCI et al Alma K-85	43°34'44.6" 60°43'01.7"	Sedco 709	85-01-29 85-04-10	78.7 (24) 223.1 (68)	11,818 (3602) P&A	

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108	Mobil et al Thebaud I-93	43°52-44.4" 60°13'50.9"	Rowan Juneau	85-03-27 85-09-30	121.4 (37) 102 (31)	16,949 (5166) P&A
109	Petro-Can et al Shelburne G-29	42°38'26.87" 63°33'33.46"	Sedco 710	85-03-31 85-04-06	82 (25) 3,684.4 (1123)	13,140 (4005) P&A
110	Shell PCI et al Peskowesk A-99	44°28'13.84" 58°58'40.98"	Sedco 706	84-04-22 85-06-13	90.2 (27.5) 203.4 (62)	13,202 (4024) P&A
111	Shell PCI et al Kegeshook G-67	44°06'32.69" 60°24'34.09"	Glomar Labrador 1	85-06-11 85-07-30	787 (24) 203.4 (62)	11,614 (3540) P&A
112	Shell PCI et al Merigomish C-52	43°31'02.65" 67°38'33.76"	Sedco 706	85-06-15 85-08-12	90.2 (27.5) 246.1 (75)	12,959 (3950) P&A
113	Mobil et al West Olympia O-51	44°00'47.48" 59°53'03.92"	Rowan Gorilla 1	85-06-23 85-11-09	124.6 (38) 127.9 (39)	15,800 (4816) P&A
114	Shell PCI et al North Triumph G-43	43°42'19.06" 59°51'22.02"	Sedco 709	85-09-26 86-02-01	78.7 (24.0) 241.5 (73.6)	14,777 (4504) P&A
115	Petro-Canada et al Cohasset A-52	43°51'08.07" 60°37-43.38"	Rowan Gorilla 1	85-12-20 86-03-27	131.2 (40.0) 118.1 (36.0)	9,340 (2847) P&S
116	Shell PCI et al North Triumph B-52	43°41'02.44" 59°52'57.04"	John Shaw	86-01-24 86-03-29	72.2 (22) 272.3 (83)	12,992 (3960) P&A Shell
117	PCI et al Tantallon M-41	43°50'55.99" 58°22'24.38"	Sedco 709	86-02-15 86-04-18	78.7 (24) 4,974 (1516)	18,379 (5602) P&A
118	Mobil et al Thebaud C-74	43°53'05.34" 60°11'35.62"	Rowan Gorilla 1	86-03-29 86-09-26	118 (36) 97 (30)	16,896 (5150) P&A
119	Husky/Bow Valley et al West Chebucto K-20	43°39'44.60" 50°47'32.40"	Bow Drill 2	86-04-05 86-08-11	74.8 (22.8) 307.1 (93.6)	17,614 (5369) P&A
120	Shell et al Glenelg N-49	43°38'59.30" 60°07'01.88"	SDS Vinland	86-06-01 86-08-04	76.1 (23.2) 237.2 (72.3)	13,254 (4040) P&A
121	Shell/PCI et al Panuke B-90	43°49'12.29" 60°42'35.52"	SDS Vinland	86-08-06 86-09-24	75.4 (23) 154.1 (47)	11,236 (3425) P&A
122	Canterra et al Whycocomagh N-90	43°39'51" 60°28'04"	Sedco 710	87-04-02 87-05-26	79 (24.1) 205.7 (62.7)	11,597 (3535) P&A
123	Petro-Canada et al Como P-21	43°50'45" 60°48'17"	Rowan Gorilla 1	87-05-15 87-07-01	132 (40.2) 127 (39)	11,614 (3540) P&A
124	Petro-Canada et al Panuke F-99	43°48'26.8" 60°44'34.7"	Rowan Gorilla 1	87-07-02 87-08-25	279 (85.3) 148 (45.1)	8,225 (2507) P&S
125	Mobil et al South Sable B-44	43°53'06.1" 59°51'41.1"	Rowan Gorilla 1	88-03-27	264 (80.4) 118 (35.9)	Drilling

*deviation from original well E-58

2 DIRECTORY OF ONSHORE WELLS

	WELL NAME	LATITUDE LONGITUDE	COMPANY (OPERATOR)	SPUD DATE COMPLETION DATE/ RIG RELEASE	DEPTH IN FEET (M) WELL STATUS[1]
1	*	46°06'22" 61°11'00"	Lake Ainslie Pioneer Oil & Salt Co.	summer, 1869 *	802 (224.5)
2	*	46°06'22" 61°11'00"	Lake Ainslie Pioneer Oil & Salt Co.	1869 1876	1600 (487.5)
3	NSDM Record #11	46°06'22" 61°11'00"	Lake Ainslie Pioneer Oil & Salt Co.	1874 *	650 (198.1)
4	NSDM Record #12	46°06'22" 61°11'00"	Lake Ainslie Pioneer Oil & Salt Co.	1874 *	900 (274.3)
5	*	46°06'22" 61°11'00"	Cape Breton Oil & Mining Co.	1875 *	1100 (335.3)
6	*	46°06'22" 61°11'00"	Lake Ainslie Pioneer Oil & Salt Co.	1877-05 *	*
7	*	46°06'22" 61°11'00"	*	autumn, 1877 *	*
8	NSDM Record #33	45°33'36" 62°40'00"	*	1878 *	280 (85.3)
9	NSDM Record #34	46°10'36" 62°47'07"	Victoria Oil Co.	1880 *	500 (152.4)
10	*	46°06'30" 61°07'49"	*	pre-1897 *	*
11	*	46°07'13" 61°08'26"	*	pre-1897 *	*
12	NSDM Record #52	*	*	1897 *	*
13	*	*	*	1898-04 *	*
14	*	45°04'07" 64°11'12"	*	1902 *	1300 (396.2)
15	NSDM Record #88	46°01'51" 61°11'48"	*	summer, 1902 *	1100 (335.3)
16	NSDM Record #91	45°31'18" 62°42'25"	*	1902-11-18 1903-07-10	620 (189.0)
17	Cheverie #1 NSDM Record #90	45°09'35" 64°09'54"	Nova Scotia Oil & Gas Co.	1903 *	1910 (582.2)
18	*	45°08'47" 64°08'42"	Nova Scotia Oil & Gas Co.	1903 *	1900 (579.1)
19	*	45°10'23" 64°09'45"	Nova Scotia Oil & Gas Co.	1903 *	1000 (304.8)
20	Falmouth Station #1	44°59'09" 64°10'13"	*	1911 *	1911 (582.5)
21	Lake Ainslie #1	46°11'03" 61°11'10"	Maritime Oil & Gas Co. Ltd.	1912 *	800 (243.8)
22	Lake Ainslie #2	46°11'07" 61°11'05"	Maritime Oil & Gas Co. Ltd.	1912 *	1612 (491.3)
23	Lake Ainslie #3	46°11'05" 61°11'06"	Maritime Oil & Gas Co. Ltd.	1912-1914 *	1120 (341.4)
24	Lake Ainslie #4	46°11'04" 61°10'56"	Maritime Oil & Gas Co. Ltd.	1912-1914 *	1110 (338.3)

	WELL NAME	LATITUDE LONGITUDE	COMPANY (OPERATOR)	SPUD DATE COMPLETION DATE/ RIG RELEASE	DEPTH IN FEET (M) WELL STATUS[1]
25	Lake Ainslie #5	46°10'55" 61°11'07"	Maritime Oil & Gas Co. Ltd.	1912-1914 *	870 (265.2)
26	Lake Ainslie #6	46°10'55" 61°11'07"	Maritime Oil & Gas Co. Ltd.	1912-1914 *	*
27	*	46°09'48" 61°12'46"	Gulf Oil Co.	1926 *	900 (274.3)
28	NSDM Record #484 Borehole #1	46°01'35" 64°27'13"	Gulf Oil Co.	1926-06-17 1926-09-17	702 (214.0)
29	NSDM Record #485 Borehole #2	46°01'36" 61°27'13"	Gulf Oil Co.	1926-09-18 1927-01-10	582 (177.4)
30	NSDM Record #505 borehole #1	46°02'32" 61°28'03"	Gulf Oil Co.	1926-09-11 1926-09-19	76.2 (23.2)
31	NSDM Record #506 Borehole #2	46°02'34" 61°27'57"	Gulf Oil Co.	1926-09-22 1926-10-12	215 (65.5)
32	NSDM Record #524 Borehole #3	46°02'36" 61°27'57"	Gulf Oil Co.	1926-10-13 1926-10-23	110 (33.5)
33	NSDM Record #525 Borehole #4	46°02'36" 61°27'57"	Gulf Oil Co.	1926-10-23 1926-11-04	220 (67.1)
34	NSDM Record #526 Borehole #5	46°02'29" 61°27'57"	Gulf Oil Co.	1926-11-05 1926-11-12	177 (53.9)
35	NSDM Record #527 Borehole #6	46°02'35" 61°27'57"	Gulf Oil Co.	1926-11-13 1927-02-28	648 (197.5)
36	NSDM Record #528 Borehole #7	46°01'40" 61°26'46"	Gulf Oil Co.	1927-03-06 1927-03-30	600 (182.9)
37	NSDM Record #529 Borehole #8	42°02'39" 61°27'57"	Gulf Oil Co.	1927-04-01 1927-04-26	664 (202.4)
38	NSDM Record #530 Borehole #9	46°03'21" 61°20'45"	Gulf Oil Co.	1927-05-05 1927-06-10	661 (201.5)
39	NSDM Record #531 Borehole #1	46°24'50" 61°06'15"	Gulf Oil Co.	1927-06-11 1927-06-24	81 (24.7)
40	NSDM Record #532 Borehole #2	46°24'48" 61°06'15"	Gulf Oil Co.	1927-05-25 1927-08-04	712 (217.0)
41	NSDM Record #533 Borehole #3	46°24'46" 61°06'15"	Gulf Oil Co.	1927-08-05 1927-08-29	189 (57.6)
42	NSDM Record #534 Borehole #4	46°24'44" 61°06'15"	Gulf Oil Co.	1927-08-30 1927-09-14	210 (64.0)
43	NSDM Record #535 Borehole #5	46°25'35" 61°05'04"	Gulf Oil Co.	1927-09-15 1927-10-07	360 (109.7)
44	Nappan #1	45°46'05" 64°13'42"	Imperial Oil Ltd.	1927-11 1927-12	673 (205.1)
45	Nappan #2	45°46'27" 64°13'52"	Imperial Oil Ltd.	1927-11 1927-12	159 (48.5)
46	Nappan #3	45°46'18" 64°13'41"	Imperial Oil Ltd.	1927-12 1928-01	210 (54.0)
47	Nappan #4	45°46'51" 64°14'08"	Imperial Oil Ltd.	1928-1929 *	795 (242.3)
48	Nappan #5	45°47'00" 64°11'24"	Imperial Oil Ltd.	1928-1929 *	795 (242.3)
49	Nappan #6	45°47'00" 64°11'24"	Imperial Oil Ltd.	1928-1929 *	298 (90.8)
50	NSDM Record #710 Nappan #7 Borehole #1	45°47'48" 64°13'24"	Imperial Oil Ltd.	1929-09-09 1929-10-15	432 (131.7)
51	Nappan #8	45°47'20" 64°13'21"	Imperial Oil Ltd.	1929 *	340 (103.6)
52	NSDM Record #720 Nappan #9 Borehole #2	45°47'55" 64°12'14"	Imperial Oil Ltd.	1929-10-31 1929-12-02	740 (225.6)
53	Nappan #10	45°48'00" 64°13'21"	Imperial Oil Ltd.	1929-1930 *	316 (96.3)

	WELL NAME	LATITUDE LONGITUDE	COMPANY (OPERATOR)	SPUD DATE COMPLETION DATE/ RIG RELEASE	DEPTH IN FEET (M) WELL STATUS[1]
54	Scotsburn No. 1	45°37'52" 63°00'13"	Imperial Oil Ltd.	1930-09-09 1931-01-03	1980 (603.5)
55	Amherst No. 1	45°47'12" 64°13'23"	Imperial Oil Ltd.	1931-03-09 1931-07-27	4134 (1260)
56	McIsaac Gas Well	46°05'42" 61°11'48"	*	1938 *	1700 (518.2)
57	Mac No. 1	46°01'49" 61°27'37"	Lion Oil Refining Co.	1944 *	5579 (1701)
58	Mary No. 1	46°02'06" 61°28'06"	Lion Oil Refining Co.	1944 *	6869 (2094)
59	Anthony No. 1	45°10'39" 63°43'54"	Nova Scotia Oil & Gas Co.	1944 1944/45	638 (194)
60	Anthony No. 2	45°10'40" 63°43'54"	Nova Scotia Oil & Gas Co.	1945 spring, 1945	870 (265.2)
61	Sunoco No. 1	45°47'05" 64°13'39"	Sun Oil Co. Ltd.	spring, 1945 Nov., 1945	6499 (1981)
62	Sunoco No. 1A	45°47'05" 64°13'39"	Sun Oil Co. Ltd.	1946-04-15 1947-09-01	11,504 (3506)
63	NSDM Record #1171	45°35'30" 62°30'12"	Pictou Petroleum Co.	1946-05-16 1946-07-16	645 (197)
64	NSDM Record #1172	45°35'25" 62°30'15"	Pictou Petroleum Co.	1946-05-16 1946-07-16	36.5 (11.1)
65	NSDM Record #1096	46°07'55" 60°00"18"	Sydney Petroleum Co.	1946-09-01 1946-10-24	253 (77)
66	NSDM Record #1097	46°08'12" 59°59'58"	Sydney Petroleum Co.	1946-09-01 1946-10-24	233 (71)
67	NSDM Record #1098	46°07'06" 60°01'55"	Sydney Petroleum Co.	1946-09-01 1946-10-24	81 (25)
68	NSDM Record #1235	45°58'29" 60°56'50"	Little Narrows Petroleum Co.	1946-11-26 1947-07-08	327 (99.7)
69	NSDM Record #1236	45°58'29" 60°56'50"	Little Narrows Petroleum Co.	1946-11-26 1947-07-08	1614 (492)
70	NSDM Record #1452	45°58'56" 60°56'45"	Little Narrows Petroleum Co.	1947-10-27 1948-04-22	2004 (610.8)
71	NSDM Record #1453	46°05'49" 61°14'53"	Little Narrows Petroleum Co.	1948-08-09 1948-09-30	694 (211.5)
72	NSDM Record #1505	45°44'17" 62°01'05"	Nova Scotia Dept. of Mines	1949-07-13 1949-09-19	712 (217)
73	Anthony #3	45°10'42" 63°43'54"	Nova Scotia Oil & Gas Co.	1951 1951	2588 (788.8)
74	Inverness #1	46°03'42" 61°23'48"	Imperial Oil Ltd.	1958-08-26 1958-09-10	510 (155.5)
75	Inverness #2	46°02'06" 61°22'35"	Imperial Oil Ltd.	1958-08-26 1958-09-10	260 (79.3)
76	Inverness #3	46°06'54" 61°11'46"	Imperial Oil Ltd.	1958-08-26 1958-09-10	480 (146.3)
77	Inverness #4	45°55'30" 61°27'24"	Imperial Oil Ltd.	1958-08-26 1958-09-10	470 (143.3)
78	Inverness #5	46°05'12" 61°09'43"	Imperial Oil Ltd.	1958-08-26 1958-09-10	100 (30.5)
79	Inverness #6	46°04'58" 61°09'39"	Imperial Oil Ltd.	1958-08-26 1958-09-10	170 (51.8)
80	Lura #1 NSDM Record #2671	45°39'42" 61°50'50"	Lura Corp. Ltd.	1958-10-04 1958-12-12	1993 (607.5)
81	Mabou #1	46°01'25" 61°24'03"	Imperial Oil Ltd.	1959-10-24 1959-12-31	5145 (1568.2)
82	Port Hood #1	46°01'55" 61°28'57"	Imperial Oil Ltd.	1960-01-16 1960-04-11	9840 (2999.2)
83	Pacific Fox Harbour	45°50'56" 63°30'47"	Pacific Petroleum Ltd.	1963-12-10 1964-05-04	9853 (3003.2)

	WELL NAME	LATITUDE LONGITUDE	COMPANY (OPERATOR)	SPUD DATE COMPLETION DATE/ RIG RELEASE	DEPTH IN FEET (M) WELL STATUS[1]
84	Birch Grove #1	46°08'42" 59°56'05"	Murphy Oil Co. Ltd.	1968-02-08 1968-03-24	4408 (1343.6)
85	Wallace Station #1	45°46'15" 63°30'30"	Anschutz Corp.	1972-12-22 1973-08-29	14,883 (4536)
86	Hastings #1	45°50'35" 64°04'52"	Gulf Oil Canada Ltd.	1975-06-11 1975-08-11	9644 (2939.5)
87	Noel #1	45°12'45" 63°42'17"	Soquip A.C.C. et al	1975-07-18 1975-08-13	4750 (1447.8)
88	Bras d'or Anschutz #1	45°39'11" 61°53'01"	Bras d'or Oil Company Ltd.	1976-07-27 1976-08-14	3427 (1044.6)
89	Bras d'or No. 3A-78	45°52'30" 61°00'20"	Chevron Standard Ltd.	1978-07-23 *	597 (182)
90	Bras d'or #1	45°52'30" 61°00'20"	Chevron Standard Ltd.	1979-09-21 1979-09-30	709 (216)
91	Bras d'or #2	45°52'45" 61°00'05"	Chevron Standard Ltd.	1979-10-03 1979-10-15	1230.3 (375)
92	Malagawatch #1	45°52'05" 60°55'18"	Chevron Standard Ltd.	1979-10-31 1979-11-23	10,203 (3110)
93	Scotsburn #2	45°38'22" 63°00'11"	Chevron Standard Ltd.	1981-08-11 1981-11-29	8654.9 (2638)
94	Port Malcolm	45°34'50" 61°17'44"	Corkan Engineering of Canada Ltd.	1983-09-13 1983-10-16	3582 (1091.8)
95	Bear Island	45°34'22" 61°17'54"	Corkan Engineering of Canada Ltd.	1983-09-30 1984-01-11	1359 (414.2)
96	Loch Lomond	45°46'11" 60°35'27"	Corkan Engineering of Canada Ltd.	1983-10-28 1984-03-01	810 (246.9)
97	North Glen	45°50'32" 60°30'10"	Corkan Engineering of Canada Ltd.	1983-10-27 1984-03-02	4120 (1255.8)
98	Irving Chevron Mull River #1	46°01'29" 61°21'36"	Chevron Canada Resources Ltd.	1988-05-30	Drilling

*Data is incomplete on these wells
[1]All wells P&A

3 GLOSSARY

Argillaceous rocks . . . . . a group of sedimentary rocks, commonly consisting of clay. Includes shales, mudstones, siltstones, and marls.

Blowout . . . . . an uncontrolled entry of formation fluid(s) into a well such that the drilling fluid is displaced.

Carbonates . . . . . sedimentary rocks composed primarily of calcium carbonate (limestone) or calcium magnesium carbonate (dolomite). Petroleum reservoirs are sometimes made up of carbonate rocks.

Clastics . . . . . sedimentary rocks composed of fragments of pre-existing rocks. Sandstone is a clastic rock.

Condensates . . . . . hydrocarbons that condense to form liquids at the surface due to reduced pressure and temperature. Condensates actually exist in a gaseous state in the reservoir. These liquids may be colorless or have red, yellow, blue, or green shades. Others are indistinguishable from very light crude oils. Condensates usually include such compounds as pentanes (C_5H_{12}) and some of the heavier hydrocarbons.

Conglomerates . . . . . rocks consisting of rounded or subrounded fragments from beaches, flood plains, etc., which have become cemented together.

Crude oil . . . . . hydrocarbons produced from a well that are liquids at the surface and also are in liquid state in the reservoir. Crude oil generally varies greatly in its properties and composition.

Diapir . . . . . an irregular upfold in geological strata in which overlying rocks are pierced by a core of low density material which has been pushed up from below.

Fluvial . . . . . a term used to denote being found in or produced by a river.

Fractionation . . . . . the process of separating liquids or gases by using the differences in their boiling points.

Hydrocarbons . . . . . compounds composed of carbon and hydrogen. A great variety of hydrocarbons exist. Petroleum is a mixture of many different hydrocarbons.

Kick . . . . . a sudden rise in the pressure of the circulating drilling fluid as it meets a higher pressure in the formation being drilled.

Lacustrine . . . . . a term used to denote being found in or produced by processes in a lake.

Natural gas . . . . . refers to light hydrocarbon compounds which, at surface temperature and pressure conditions, are in a gaseous state. These typically include compounds such as methane (CH_4), ethane (C_2H_6), propane (C_3H_8), and butane (C_4H_{10}).

Onlap . . . . . progressively younger strata resting upon older strata.

Overpressure . . . . . the abnormally high pressure encountered in some subsurface formations. An example is the overpressured sandstones in the Sable Sub-basin on the Scotian Shelf.

Permeability . . . . . a measure of the ease with which fluids can flow through a porous rock; the fluid conductivity of a porous medium.

Physiography . . . . . the description of the features and phenomenon of nature.

Porosity . . . . . the amount of void space in a rock that can contain fluids. Measured as a percentage of rock volume.

Stratigraphy . . . . . the branch of geology concerned with the study of the origin, composition, distribution, and succession of rock strata (beds of rock).

Topography . . . . . the science of displaying or representing the surface features of a region, as on maps and charts.